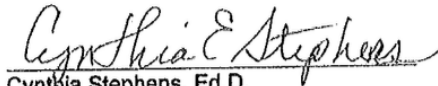
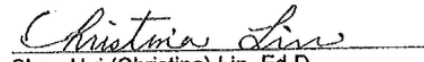


ACCEPTANCE

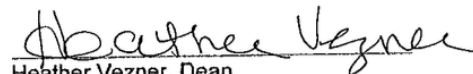
This dissertation, INTRINSIC MOTIVATION AND ONLINE LEARNING IN ELEMENTARY EDUCATION: A PHENOMENOLOGICAL MIXED METHODS APPROACH EXPLORING CHILDREN'S EXPERIENCES LEARNING ONLINE, was prepared under the direction of the candidate's Dissertation Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree of Doctor of Education in Leadership in the School of Education, Concordia University Irvine.


Cynthia Stephens, Ed.D.
Committee Chair


Shao-Hui (Christina) Lin, Ed.D.
Committee Member


Teresa Egan, Ed.D.
Committee Member

The Dissertation Committee, the Dean, and Senior Director of the Doctor of Education Program of the School of Education, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty.


Heather Vezner, Dean
School of Education


Kellie Albrecht, Senior Director
Doctor of Education Program

COPYRIGHT PERMISSION
AGREEMENT

Concordia University
Library 1530 Concordia
West
Irvine, CA 92612
www.cui.edu/library
librarian@cui.edu

I, Brooke Hermann, warrant that I have the authority to act on any copyright related matters for the work, INTRINSIC MOTIVATION AND ONLINE LEARNING IN ELEMENTARY EDUCATION: A PHENOMENOLOGICAL MIXED METHODS APPROACH EXPLORING CHILDREN'S EXPERIENCES LEARNING ONLINE, dated May 6, 2023 to be included in the Concordia University Library repository, and as such have the right to grant permission to digitize, republish and use the said work in all media now known or hereafter devised.

I grant to the Concordia University Library the nonexclusive worldwide rights to digitize, publish, exhibit, preserve, and use the work in any way that furthers the educational, research and public service purposes of the Concordia University.

This Agreement shall be governed by and interpreted in accordance with the laws of the State of California. This Agreement expresses the complete understanding of the parties with respect to the subject matter and supersedes all prior representations and understandings.

ACCESS RESTRICTIONS

My electronic thesis or dissertation can be made accessible via the Concordia University Library repository with the following status (select one):

- ☒ Option 1: Provide open access to my electronic thesis or dissertation on the internet
- ☐ Option 2: Place an embargo on access to my electronic thesis or dissertation for a given period from date of submission (select one):
- ☐ 6 months ☐ 1 year ☐ 3 years

Permission Granted By:

Brooke Hermann

Brooke Hermann

March 28, 2023

Date

VITA

Brooke Hermann

ADDRESS 1530 Concordia West
Irvine, CA 92612
brooke.hermann@eagles.cui.edu

EDUCATION

Edd	2020-Present	Concordia University Irvine Educational Leadership
MA	2002	National University, San Jose Education & Cross-Cultural Teaching
BA	Year	San Jose State University, San Jose English

PROFESSIONAL EXPERIENCE

2021-Present	Intervention Specialist Teacher for K-8 th Grade Limitless Learning Academy Escondido Union School District
2017-2021	English Language Arts District Instructional Coach Department of Education Escondido Union School District
2015-2017	Intervention Teacher & 5 th Grade Teacher Rose Elementary School Escondido Union School District
2010-2015.	Owner & Lead Tutor Tutor Toes Tutoring Center San Clemente, California
2007-2015	Elementary Teacher & Long-Term Substitute R. H. Dana Elementary School Capistrano Unified School District
2002-2007	Elementary Teacher 1 st , 4 th , 6 th , & 7 th Grade Allen Elementary & Evans Elementary School Garden Grove Unified School District

INTRINSIC MOTIVATION AND ONLINE LEARNING IN ELEMENTARY EDUCATION:
A PHENOMENOLOGICAL MIXED METHODS APPROACH EXPLORING CHILDREN'S
EXPERIENCES LEARNING ONLINE

by

Brooke Hermann

A Dissertation

Presented in Partial Fulfillment of
Requirements for the
Degree of
Doctor of Education
in
Leadership
May 6, 2023

School of Education
Concordia University Irvine

ABSTRACT

Intrinsic motivation is a crucial factor for students' learning and academic achievement and the initial drive for capturing students' interest in learning and engagement in a particular subject. There is a relationship between motivation and learning in traditional schools (Brophy, 2010; Schunk et al., 2014); however, despite the fact that motivation serves as a critical determinant for academic learning, there is a lack of research about how intrinsic motivation affects elementary students' online learning. Most of the research on traditional and online learning is based on self-determination theory, a theory of motivation. Studies of elementary students who are learning online are minimal and lack concrete examples of how students experience intrinsic motivation in distance learning.

This study aimed to investigate how elementary students experience intrinsic motivation while learning online. A mixed methods phenomenological approach was used, incorporating survey questionnaires and interviews with an art task for students to explore how they experience intrinsic motivation while learning online. The study involved 25 students in first grade through sixth grade in multiple subject classrooms attending a full-time online school in a single suburban school district. Students participated in a survey questionnaire and semi-structured interview, measuring the experience of intrinsic motivation according to questions. These questions were based on self-determination theory factors for motivation: autonomy, competency, and relatedness factors. The results from the study have the potential to provide valuable insights for educators teaching online with practical strategies to enhance motivation and academic achievement among elementary students in online learning environments.

TABLE OF CONTENTS

	Page
TABLE OF CONTENTS	i
LIST OF TABLES	vi
LIST OF FIGURES	viii
ACKNOWLEDGEMENTS	ix
CHAPTER 1: INTRODUCTION.....	1
Statement of the Problem	4
Purpose of the Study.....	5
Research Questions	5
Primary Research Question	6
Sub-Questions.....	6
Theoretical Framework	6
Self Determination Theory (SDT).....	9
Significance of the Study.....	13
The Researcher	14
Definition of Terms	15
Limitations and Delimitations	17
Assumptions	17
Organization of the Study.....	18
Summary.....	19
CHAPTER 2: REVIEW OF LITERATURE	20
History of Online Learning Schools in the United States	22

Advantages	23
Disadvantages	26
Online Teaching and Instruction	29
Online Teachers' Role	33
Class Curriculum and Instruction	38
Effective Instructional Strategies	39
Personalized Instruction	40
Students' Behavior and Motivational Influences	42
Cognitive Learning and Theories of Motivation	43
Self-Regulation	44
Intrinsic Motivation	47
Theoretical Framework: Self-Determination Theory	49
Cognitive Learning Theory	51
Self-Determination Theory	52
Instructional Implications for Effective Online Instruction	71
Summary	73
CHAPTER 3: METHODOLOGY	74
Research Design and Rationale: A Phenomenological Mixed Methods Approach ..	74
Research Data Security	78
Setting and Participants	82
Sampling Procedures	83
Sampling Limitations	86
Instrumentation and Measures	87

Online Learning Intrinsic Motivation Inventory	92
Basic Psychological Needs Satisfaction	93
Interviews	96
i-Ready Assessments	103
Reliability	103
Validity	104
Data Collection	112
Data Analysis.....	116
Ethical Issues	122
Summary.....	126
CHAPTER 4: RESULTS	128
Participant Demographics	129
Quantitative Data Analysis.....	131
The OLIMI and BPNS-OL Survey Questionnaires.....	132
Descriptive Statistics for the OLIMI	134
Descriptive Statistics for the BPNS-OL	137
Correlational Analysis of the OLIMI and BPNS	139
Interview Emoji Response: Quantitative Results	140
Correlational Analysis of Survey Scores and i-Ready Assessments.....	141
Findings of Qualitative Research	145
Survey Questionnaire: Open-Ended Question Findings.....	146
Analysis of OLIMI Open-Ended Questions	147
Analysis of BPNS-OL Open-Ended Questions	150

Student Interview Analysis and Findings.....	153
Thematic Intrinsically Motivating Influential Factors	154
Nonmotivational Factors of Online Learning.....	174
Interview Color Symbol Image (CSI) Artifact Task Results	175
CSI Artifact Results and Analysis.....	179
Summary.....	183
CHAPTER 5: DISCUSSION	185
Summary of the Study	185
Implications for Practice.....	187
Recommendations for Further Research	191
Limitations.....	192
Delimitations	193
Conclusions	194
Summary.....	195
REFERENCES	197
APPENDICES	232
Appendix A: CITI Certificate.....	232
Appendix B: IRB Approval.....	233
Appendix C: Parental Informed Consent Letter	234
Appendix D: Parental Informed Consent Letter (Spanish)	236
Appendix E: Parent Informed Consent for Photography/Video/Audio Use	238
Appendix F: Parent Informed Consent for Photography/Video/Audio Use (Spanish)	240
Appendix G: Parent Permission & Minor's Assent Letter	241

Appendix I: Interview Bag	255
Appendix J: CSI Artifact Student Sample	258

LIST OF TABLES

Table 1.	Intrinsic Motivation Survey (IMI) Adaptation to Online Learning Intrinsic Motivation Inventory (OLIMI).....	91
Table 2.	Basic Psychological Need Satisfaction Scale (BPNS) Adaptation to Online Learning Needs Satisfaction (BPNS-OL)	95
Table 3.	Interview Questions for Exploring Student Experiences with Intrinsic Motivation.	98
Table 4.	Participants' Demographic Statistics: Gender, Age, and Grade Level.....	129
Table 5.	Final Scores for the Survey Questionnaire Indicating Intrinsic Motivation..	133
Table 6.	Descriptive Statistics for the OLIMI	135
Table 7.	Descriptive Statistics for the BPNS-OL	138
Table 8.	Pearson Correlations Between OLIMI and BPNS-OL.....	139
Table 9.	Participant Emoji Responses Used During Interviews.....	140
Table 10.	Correlational Analysis Between Survey Questionnaire Scores and i-Ready Scores	142
Table 11.	Pearson Correlations Between OLIMI Subcategory Scores and ELA i-Ready	142
Table 12.	Pearson Correlations Between OLIMI Subcategory Scores and Math i-Ready	143
Table 13.	Pearson Correlations BPNS-OL Subcategory Scores and ELA i-Ready	144
Table 14.	Pearson Correlations Between BPNS-OL Subcategory Scores and Math i-Ready... ..	144
Table 15.	Thematic Analysis of Scores from the First Open-Ended Question of OLIMI.....	148
Table 16.	Thematic Analysis of Scores from the Second Open-Ended Question of OLIM.....	149
Table 17	Thematic Analysis of Scores from the First Open-Ended Question of BPNS-OL	151

Table 18.	Thematic Analysis of Scores from the Second Open-Ended Question BPNS-OL	152
Table 19.	Thematic Analysis of Interviewees: Autonomy	158
Table 20.	Thematic Analysis of Interviewees: Competency	164
Table 21.	Thematic Analysis of Interviewees: Relatedness	170
Table 22.	Interview Color Symbol Image (CSI) Artifact Student Responses	175
Table 23.	Participant Interview Response: Motivational Strategies and Activities	182

LIST OF FIGURES

Figure 1.	Human Needs Central to Intrinsic Motivation and Academic Achievement	12
Figure 2.	Mixed Methods Multi-Phase Triangulation Research Design	77
Figure 3.	Emoji Zoom Reactions and Their Meanings.....	100
Figure 4.	Making Thinking Visible, CSI Thinking Routine Template.....	102
Figure 5.	“The Data Collection Circle” (Creswell & Poth, 2018).....	112
Figure 6.	Data Analysis Procedures: “Winnowing Down” (Creswell & Clark, 2004).	119
Figure 7.	Research Data Collection & Analysis Timeline.....	122
Figure 8.	Percentages of Grade Level Participants	131
Figure 9.	Students’ OLIMI Scores for Interest/Enjoyment	136
Figure 10.	OLIMI Pressure/Tension Score Results	137
Figure 11.	BPNS-OL Relatedness Score Results	138
Figure 12.	Extrinsic and Intrinsic Factors of Motivation from the OLIMI First Question	148
Figure 13.	Extrinsic and Intrinsic Factors of Motivation from the OLIMI Second Question.....	149
Figure 14.	Extrinsic and Intrinsic Factors of Motivation from BPNS-OL First Question	151
Figure 15.	Extrinsic and Intrinsic Factors of Motivation from BPNS-OL Second Question.....	153
Figure 16.	Interview Response: Positive and Negative Thematic Comparisons	174
Figure 17.	Colors Chosen to Describe How Students Feel About Learning Online	180
Figure 18.	Symbols Chosen to Describe How Students Feel About Learning Online ...	180
Figure 19.	Images Chosen to Describe How Students Feel About Learning Online	181
Figure 20.	Most Frequently Used Adjectives to Describe Intrinsic Motivation.....	184
Figure 21.	Intrinsically Motivating Factors Students Experienced While Learning Online	186

ACKNOWLEDGEMENTS

In acknowledgment of those for whom I feel pure love and gratitude.

My Mother, a true servant leader, spreading love to all, in her personal and professional life.

My Father, an ethical leader and demonstrator of how public education can be led with genuine integrity and purpose for serving others.

My Grandmother, a natural teacher in education and life!

My Grandfather, an example of endurance, wisdom, and true love for my grandmother.

My eldest brother, an example of multiple intelligences and unconditional giving to others.

My second oldest brother, an example of intellectual expertise combined with practical wisdom.

My Dissertation Chair, Dr. Stephens, a trustworthy intellectual leader with a passionate spirit.

My Committee Member, Dr. Egan, a family friend, and a compassionate educational leader.

My Committee Member, Dr. Lin, a leader with extensive educational knowledge and expertise.

My Mixed Methods Professor, Dr. Karge, an inspirational, intellectual, ethical leader, and an example of a true servant leader.

My school site administrator, a positive force supporting others to follow their passions.

My school site staff, a loving and supportive group creating positive educational changes.

My students, the young people who have intrinsically motivated me throughout my educational career to continue my purpose to improve education.

My true love, Porter, an example of my greatest wish come true!



CHAPTER 1: INTRODUCTION

Online learning is a current trend in education that continues to grow with technological advances and more accessibility in the United States. Online learning, defined as a type of learning that takes place 100% over the Internet, is also referred to as distance learning and e-learning (Powell & Patrick, 2006). Online schools offer instruction asynchronous, synchronous, or a combination of the two, known as hybrid learning. Synchronous learning is facilitated over the Internet while attending class simultaneously with the instructor and classmates in real-time in different locations. Online asynchronous learning is education in the form of instruction and learning that does not occur in the same place or time as the instructor and classmates. Hybrid online learning, also known as blended learning, combines synchronous and asynchronous learning and often includes in-person learning. Over the past decade, elementary schools offering online learning have continued to evolve with an even more significant increase in response to policies enacted during the COVID-19 pandemic that required schools to provide instruction online. Following this transition, many schools in America continued to provide online learning options for kindergarten through twelfth-grade students as a permanent option. In response to growing interest from parents or guardians, elementary schools have offered more online learning classes as independent study options in elementary.

The growing interest in online learning for education in the United States continues to increase, underscoring the need to examine online schools for proficient teaching and learning effectiveness. In the United States, “43% of fourth- and eighth-grade students were enrolled in remote instruction in February 2021. In comparison, in May 2021, 26% of fourth- and eighth-grade students were enrolled in remote instruction” (Barnett & Hein, 2021, para. 7). Opportunities for elementary schools to offer distance learning continue to increase with

technological advances, while new pedagogical practices for modernizing the traditional classroom experience are needed.

Motivation is an essential factor behind students' success in online classrooms (Hau & Kim, 2011; Lou et al., 2013; Sun et al., 2019). Specifically, intrinsic motivation is the most research-based determinant of online learning success; for instance, online adult learners are more intrinsically motivated than adults attending in-person classes (Wighting et al., 2008). Intrinsically motivated behavior refers to engaging in an activity solely for personal satisfaction rather than an external reward (Deci & Ryan, 2000a). Students enrolled in online learning are required to complete many activities independently and they are more successful when they demonstrate self-regulation skills that are often developed by being intrinsically motivated.

While there is available research concerning intrinsic motivation and online learning, most samples include only adults, with few samples including elementary-aged students. There is a positive correlation between motivation and academic success (Brophy, 2010). Most scholars have demonstrated how intrinsic motivation relates to academic success in traditional classrooms rather than online classrooms. In addition, the available studies for online learning motivation are limited in number and scope (Bekele, 2010; Hartnett, 2016). These studies also primarily focus on the learning environment as a motivational factor while ignoring additional critical factors for motivating elementary students, such as the role of teachers.

The available studies regarding elementary students' learning and motivation indicate that intrinsic motivation is often explored primarily as an effect of the learning environment or as an attribute of learners while not recognizing that elementary students can be motivated to various degrees differently in any given context and time (Turner & Patrick, 2008). The existing analyses regarding teachers' influence on students' motivation in traditional classrooms is

valuable for the success of online elementary education. Therefore, a study should be conducted to examine how elementary students perceive intrinsic motivation and what specifically motivates them. The results from this study can provide valuable information for educators to create the most effective instruction for today's online learners.

There is potential for discovering effective motivational strategies for teachers to implement online by exploring students' learning experiences. Past studies demonstrate the need to reexamine the impacts of curriculum and intervention strategies on students' learning motivation. Researchers have conducted very few high-quality, evidence-based studies to examine the effectiveness of online learning compared to face-to-face instruction (Huett et al., 2008); however, some researchers have examined curriculum-specific interventions for online classes and identified that elementary online instruction is still in the early development stages. At the same time, educators require a transformation in teaching and suggested looking at online education as more of "an engineering or science-style discipline" (Huett et al., 2008, p. 66). Other researchers have agreed with this suggestion, naming brain-based learning strategies related to self-determination theory (SDT) needed for online instruction and teaching students computer skills necessary for active online class participation.

Students need opportunities to actively participate during lessons that require students' ability to interact with information and communication technology. At the same time, teachers need to make students more accountable for actively engaging in the learning process while creating relevant lessons. Students find relevance in solving problems they may face in real life (Mansur, 2021; Wallace & Kremzar, 2002). While researchers agree with the need to increase students' motivation by transforming impactful instructional practices online, they have primarily examined high school-level learners and those in higher education. The motivational

needs of children are significantly different from adults, so what may motivate adults aligns differently with elementary students. Many scholars have identified the fulfillment of specific human needs for intrinsic motivation development in younger age groups.

Self-determination theory is a significant indicator of a correlation between academic success and intrinsic motivation. Self-determination theory identifies three basic needs for developing intrinsic motivation. Theories of intrinsic motivation confirm that nurturing competence, autonomy, and relatedness enhances student motivation and engagement in any age population (Cook & Artino, 2016; Deci & Ryan, 1985; Evans & Boucher, 2015; Froiland & Oros, 2014; Liu et al., 2020; McCombs, 2015; Orsini et al., 2015; Ransdell & Rieck, 2020; Salikhova et al., 2020). While researchers has revealed educational implications for SDT factors influencing students' intrinsic motivation, these scholars are also limited to traditional in-person learning in early education. Elementary-aged students may experience lower satisfaction, minimal engagement, and low academic success in online education. These negative results have created an urgency for effective online teaching strategies while educators continue to express a lack of availability for valuable resources for elementary-age students. These results further support the need to identify intrinsically motivating factors and teaching strategies that impact academic performance in the online classroom.

Statement of the Problem

The newly reported increase in online learning options and reported disadvantages for elementary students who are learning online reveals how deeply this new instructional arena lacks research-based strategies for informing teachers how to implement effective online instruction. This lack of knowledge is impacting students' education negatively and not providing the best learning environment for encouraging optimal levels of learning. Because

there is a correlation between intrinsic motivation and academic success (Artino, 2008; Brophy, 2010; Keller, 2008), a study was needed to explore how students experience the phenomenon of intrinsic motivation online to identify the most effective teaching methods for educators. Children with higher levels of intrinsic motivation have significantly higher academic achievement (Gottfried, 1982, 1985, 1990). For this reason, researchers have implied the possibility of the same achieved levels of academic performance possible learning online.

Scholars have demonstrated that intrinsic motivation, developed by a supportive learning environment encouraging autonomy, competency, and relatedness, contributes to both engagement and optimal learning in different educational contexts (Deci & Ryan, 1985; Kusurkar et al., 2011; Niemiec & Ryan, 2009; Ransdell & Rieck, 2020; Salikhova et al., 2020; Yazdi, 2016). Given that intrinsic motivation is the impetus for educational and academic performance success, a study is necessary to examine the impact of SDT strategies in online learning in the elementary educational setting. This study demonstrated whether SDT strategies have a significant influence on students' academic performance.

Purpose of the Study

This phenomenological study explored first through sixth-grade elementary students' experience with intrinsic motivation while participating 100% in online learning at an online, hybrid elementary public school. This study also sought to identify relational academic performance rates while exploring students' firsthand account experiences. In this study, the phenomenon of elementary students' motivation in online learning and academic performance was generally defined as intrinsic motivation and effective instruction.

Research Questions

To gain an in-depth understanding of how elementary students experience intrinsic

motivation in online learning, the researcher addressed four specific research questions:

Primary Research Question

1. How do students experience intrinsic motivation in online learning?

Sub-Questions

2. How do students describe the experience of intrinsic motivation in online learning?
3. What intrinsically motivates students in online learning?
4. How does the experience of intrinsic motivation relate to student academic performance?

Theoretical Framework

This phenomenological study focused on elementary students' experience with intrinsic motivation while learning online with a cognitive learning theoretical lens based on self-determination theory. A study that examines a phenomenon such as motivation relies heavily on qualitative research methods necessary for exploring the elementary student's accurate account of the online learning experience. Marton (1986) defined *phenomenography* as "a qualitative research method used to identify different ways people perceive and experience a particular phenomenon in connection with the world around them" (p. 143). This study used interviews and artifacts to identify elementary students' definitions, understanding, and experience with the phenomenon of intrinsic motivation in the online classroom.

The phenomenological study approach is valuable for exploring factors central to learning and education (Marton, 1986). Marton explained how educators have sought ways to explore students' lived experiences in education by placing the student at the center of phenomenological studies: "Indeed, education is a social process, and language is bewitching, but fundamentally an education worthy of its name involves the transformation of individual

perception and consciousness. Thus, these philosophers of education have sought methods and sources that enable the exploration of individual life-worlds (p. 36). Marton identified the main reasoning behind the qualitative research approach for this study. Because elementary students were the focus of the data collection in this study, their perspectives provided answers to what motivates children online. Through interviews, the researcher collected the most candid and authentic research. Interviewing students allowed the researcher to record the most accurate account of elementary students' experiences with intrinsic motivation and learning online.

With a phenomenological approach, the researcher utilized the best way to explore individual student perceptions and relations between students and the phenomenon of intrinsic motivation. By examining students' firsthand accounts, the researcher could reveal "what" the elementary school students experienced and "how" they experienced it (Moustakas, 1994). The generalized data population represented students in online elementary schools learning across the nation. The phenomenological method fulfilled the requirements of a purposeful study with what van Manen (1990) described as the goal to "reduce individual experiences with a phenomenon to a description of the universal essence" (Creswell & Poth, 2018, p. 75). With a purposeful student population identified, these sample of elementary students in online classes exemplified the perceptions of the broader population.

It was imperative to fill the gaps in current research by not just exploring academic data from elementary schools but also by hearing about the lived experience of students learning online. The phenomenological research approach was most appropriate for examining the experience of intrinsic motivation. This study required an interpretative phenomenological analysis exploring how participants experience intrinsic motivation online. To understand students' experiences with intrinsic motivation, the researcher used motivating factors revealed

in current studies indicating success with online learning for adults and success in learning in traditional elementary classrooms.

Three factors most studies identify for encouraging intrinsic motivation in students are nurturing competence, autonomy, and relatedness (Boudreau, 2019; Deci & Ryan, 1985, 2017; McCombs, 2015; Niemiec & Ryan, 2009; Orsini et al., 2015; Rieck, 2020; Salikhova et al., 2020; Sun et al., 2019). Encouraging competence, autonomy, and relatedness reduces alienation and enhances motivation and engagement in any age (McCombs, 2015). The study included research in online learning identifying the intrinsically motivating factors related to SDT and the ways children experienced such motivation.

Self-regulation as a critical component for individuals to succeed academically in online education, which develops through intrinsic motivation. The more distance between a learner and their instructor, the more responsibility is placed on the learner to be independent and self-directed (Moore & Kearsley, 2005). Higher achieving students show greater metacognitive regulation and satisfaction with online learning than lower achieving students (Puzziferro, 2008). Knowing students are more successful learning online with metacognitive regulation, more research needs to be conducted to explore how students develop self-regulation.

Self-regulation includes behaviors that motivate people to learn, encouraged by the fulfillment of three universal psychological needs. These needs are competence, relatedness, and autonomy. Self-regulation refers to cognitive abilities and behaviors correlated to achieving personal goals (Bradley et al., 2017; Gazzaniga et al., 2010; Zimmerman, 2000). Studies with adult participants show that intrinsic motivation is a determining factor for developing self-regulation skills. SDT defines self-regulation skills as one of the predictors of academic success in educational environments (Bradley et al., 2017; Pintrich & De Groot, 1990; Zimmerman,

2002; Zimmerman & Martinez-Pons, 1986). Students' self-regulation skills include the ability to plan, monitor, reflect, and adjust their learning (Cho & Shen, 2013; Duncan & McKeachie, 2005; Puzziferro, 2008). For example, students must maintain active engagement in online lessons and class discussions while collaborating with instructors and peers. At the same time, students must also complete tasks during class and complete the majority of course work independently. To complete the independent work requirements in online classes, students need self-regulatory skills and teacher support with SDT-based instructional methods.

Self Determination Theory (SDT)

Due to their academic success in traditional in-person classrooms, elementary-aged students are capable of intrinsic motivation. Although elementary students can be intrinsically motivated, there is insufficient research on what works best to motivate students to learn online. The minimal research also lacks the perspective of children experiencing online learning firsthand. By utilizing firsthand accounts, this study contributes to a meaningful understanding of what children perceive as intrinsic motivation, self-regulation, and success in online learning.

The motivational factors of SDT effectively influence adults who are learning online and elementary students who are in traditional classrooms; therefore, this study aimed to discover the needs of online elementary students to see if they are related to such research. This study explored firsthand accounts of the online learning experience necessary for phenomenological research to determine elementary students' understanding, beliefs, and interpretations of the online school experience. Phenomenological studies attempt to seek and understand first-person experiences (Ellis, 2016).

This study also included qualitative data collection necessary for exploring participants' firsthand accounts. Qualitative research can help researchers to gain multiple realities for the

same types of phenomena examined in this study (Creswell & Poth, 2018). Writers engaging in a phenomenological study must report the different ways participants view their experiences (Moustakas, 1994). Through phenomenological research interviews, students shared their unique experiences and perspectives with intrinsic motivation. By examining different children experiencing the same phenomenon, the researcher could explore similarities or differences among participants' perceptions.

This research study utilized SDT to guide the phenomenological design exploring students' experience with intrinsic motivation learning online. It was essential to identify how children experience the phenomenon of intrinsic motivation while learning online to develop teaching practices to motivate children intrinsically. A phenomenological research approach is necessary for research that focuses on understanding of a shared experience to develop practices or policies (Creswell & Poth, 2018). To seek students' perceptions not based on the researcher's assumptions or teacher perceptions, the researcher interviewed elementary school children who have experienced online learning to hear what they experienced as intrinsic motivation.

Intrinsic motivation is a behavior based on cognitive learning theory. Cognitive learning theory is one of many theories explaining influential factors of motivation impacting the learning process. Intrinsic motivation is motivation provoked without external rewards and conducted for enjoyment and satisfaction or as an opportunity for actualizing one's potential (Coon et al., 2010). Intrinsic motivation has been identified as a driving force behind self-regulation and is necessary to complete assignments and actively engage in online learning. Online learning requires students to act more independently than during in-person instruction.

Students who are successful in school tend to exhibit independent traits influenced by the learning environment that motivate them to be engaged in different learning environments.

Intrinsic motivation and self-determined types of extrinsic motivation positively impact students' engagement and learning in various contexts (Niemic & Ryan, 2009; Salikhova et al., 2020). Students experience intrinsic motivation by engaging in challenging activities they find personally interesting and by satisfying the psychological needs identified in SDT regardless of an external reward. Children need to be intrinsically motivated to be capable of self-regulatory behaviors in academics.

Children are inherently motivated by the fulfillment of needs identified in SDT. When supports for these factors or conditions exist in a learning environment, students are more apt to develop intrinsic motivation, leading to self-regulation with schoolwork. Theories of intrinsic motivation confirmed that nurturing competence, autonomy, and relatedness reduced alienation and enhanced motivation and engagement regardless of age (McCombs, 2015). This phenomenological study determined the motivational factors experienced by students.

Using a phenomenological study with a theoretical lens rooted in cognitive learning theory and SDT, the researcher heard from the children about their need to be intrinsically motivated and successful in online learning. The unique aspect of this study was exploring the children's firsthand accounts of learning online removed from teachers' and parents' perspectives. The children's perspectives were essential to knowing their needs and gaining the truth about the best way to nurture the development of the most successful online learner.

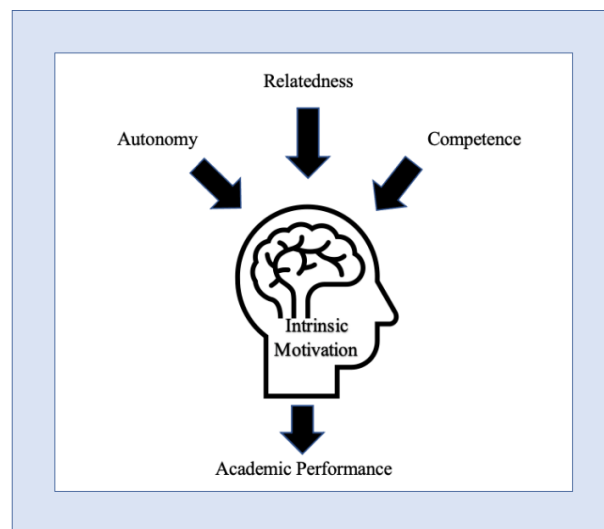
Children need choices in educational options with equally effective opportunities for experiencing education online as they do in traditional schools. With the continued development of technology, online learning offers an advanced and unique opportunity for self-paced education, which allows students to learn and grow in a more personalized and impactful way to meet individual needs best. Education continues to develop with advancements in technology,

research, and theories expanding educators' knowledge of how to educate students best to seek their highest capacity to learn at optimal levels. Finding how to promote these optimal learning levels is critical to the continued development of online education.

Children who are more capable of independent learning practices can self-regulate with the ability to hold themselves accountable for doing the work needed online. Even with teachers not present with them for every lesson and assignment like in a traditional classroom, students with self-regulatory skills complete tasks online. Online learning success depends on students continually engaging in class activities and requires self-regulation (Lee & Choi, 2001). Self-regulatory behaviors correlate with explanations rooted in cognitive-behavioral theories. As seen in Figure 1, autonomy, relatedness, and competence are human psychological needs central to the development of intrinsic motivation, academic performance, and well-being, influencing students' capacity to fully realize their optimal levels of learning (Deci & Ryan, 2000c).

Figure 1

Human Needs Central to Intrinsic Motivation and Academic Achievement



Note. Human needs are central to the online learner impacting academic performance based on Self Determination Theory (Deci & Ryan, 2000c, p. 263).

Significance of the Study

This study significantly discovered specific ways children experienced intrinsic motivation in learning online. By identifying patterns for how children experience motivation to learn, there is potential to create better teaching strategies to improve online education teaching practices. The number of online learning elementary schools is increasing with the need for educating children with flexible, accessible, and high-quality home-based learning alternatives for public school children. Elementary school teachers need effective ways to engage students to participate in the online classroom and raise their levels of learning equally or better than in the traditional classroom. This study provided implications for improving teacher education to instruct online better.

By exploring students' intrinsically motivating learning experiences concerning academic performance rates, this study offers educators knowledge and increased ability to meet student needs for academic success. It was imperative to explore this possibility by researching what has worked in online learning with other populations and combining those overlapping elements with SDT-based strategies. Gottfried (1990) recognized the importance of intrinsically motivating students for the betterment of learning and increasing students' effective school functioning. In response to national declining test scores Gottfried explained there is a vital need to use motivational teaching methods of instruction as early as possible to increase student academic performance. This study's significance expanded on current online learning research lacking studies with elementary-aged students. An investigation was needed to examine if and how students are experiencing intrinsic motivation the same way research demonstrated they are in traditional classrooms with SDT-based supports. Educators need this information to improve online learning environments to support student success.

The Researcher

The researcher worked as a district instructional coach for a public school district during the 2020 school closures due to the pandemic. The researcher created online lessons and instructional strategies for all third to fifth-grade teachers and was required to restructure the curriculum for all language arts lessons. The researcher needed to ensure that all lesson plans were easily adaptable to teachers' needs while maintaining standards-based instruction so that students would continue to benefit from the curriculum. She also needed to ensure that there was as little disruption to students' education as possible.

For the remainder of the 2020 school year and throughout the 2020-2021 school year, the researcher continued to create priority standardized lessons for all language arts students, third through fifth grade, in a public school district. During these two years of creating online learning lessons while designing a new curriculum, the researcher also worked with elementary teachers throughout the school district while maintaining conversations, meetings, and surveys for assessing online learning instruction. These interactions proved that teachers struggled with student engagement and attendance in full-distance learning classrooms.

The researcher currently works as an intervention specialist at an online learning kindergarten through eighth-grade school in the same district. For the past three years, working with students, teachers, principals, and instructional district leaders, the researcher has gathered information through personal interactions and district academic data collection. Conversations with educators and data analysis showed significant evidence that online learning lacked student engagement with low attendance rates and weak language arts and mathematics assessment results. District attendance data reported that during the 2019-2020 school year, with total distance learning for all schools, out of 17,000 students in the district, only 30% participated in

their online classes during the school closures, which occurred from March through May 2020. Following the mandatory online learning for all schools in the district in response to the pandemic in-person school closures, the school district gathered evidence from an online survey sent to parents and teachers at the closing of the 2019-2020 school year regarding their distance learning roles and experiences. Most parents who participated in the survey reported their children lacked interaction with their teachers.

In contrast, most teacher-recorded responses commented on the lack of training and knowledge for distance learning platforms and instructional strategies. Most teachers requested the need for distance learning training. As the district administrative task force reflected on these results, they validated the need for effective instructional practices for online instruction at the elementary level. This information led the researcher to believe there is a need to examine how elementary students experience academic success online. Elementary teachers need to adjust their instruction to benefit students' motivation to engage and learn successfully online. All the district's schools expressed concern that online learning is not meeting the needs of children. Still, educators could not find detailed information on best practices for implementing online learning.

Definition of Terms

The following are definitions of critical terms significant to this research.

Academic performance: The measurement of student achievement across various academic subjects (Ballotpedia, 2022).

Asynchronous learning: A type of learning conducted over the Internet in which neither students nor the teacher meets in-person or remotely for class.

Cognitive learning: An active style of learning that focuses on helping individuals learn

how to maximize their brain's potential (Valamis, 2022).

Cognitive learning theory: A theory that explains how internal and external factors influence an individual's mental processes to supplement their learning (Valamis, 2022).

Distance learning: The transfer of courses through audio, live video, recorded video, and real time and non-real-time computer technologies to the education outside the campus; also called distance education (Wen et al., 2019).

E-learning: The method of learning supported using information technology (Nehme, 2010).

Elementary education: The first stage traditionally found in formal education, beginning at about age five to seven and ending at about 11 to 13, also referred to as primary education (Augustyn et al., 2022).

Hybrid learning: A type of learning that includes a combination of online and in-person instruction.

In-person learning: Any form of instructional interaction that occurs "in person" and in real time between teachers, students, colleagues, and peers (The Glossary of Education Reform, 2013).

Intrinsic motivation: Completing an activity for its inherent satisfactions rather than for some separable consequence (Ryan & Deci, 2000a).

Online learning: A type of learning that takes place over the Internet (Powell & Patrick, 2006, p. 3).

Self-determination theory (SDT): A theory that suggests people are motivated to grow and change by fulfilling three innate and universal psychological needs, including competence, connection, and autonomy (Ryan & Deci, 2000b).

Self-regulation: Consists of cognitions and behaviors that coincide with achieving personal goals (Bradley et al., 2017; Gazzaniga et al., 2010; Zimmerman, 2000).

Self-regulated learning (SRL): Processes whereby learners activate and sustain cognitions, affects, and behaviors systematically oriented toward attaining personal goals. By setting goals, learners create self-oriented feedback loops through which they can monitor their effectiveness and adapt their functioning (Zimmerman & Schunk, 2011).

Synchronous learning: A type of learning in which students attend class virtually over the Internet from different locations during real-time.

Limitations and Delimitations

There were relevant anticipated limitations and delimitations in the study. The researcher acknowledged the potential for these limitations and delimitations with discussions in the Chapter three methodology section and later in the descriptive conduct of the research. In Chapter five, these limitations and delimitations are refined and confirmed in full detail.

Assumptions

This study identified specific strategies to improve online learning, which is currently in a critical developmental stage for early education. The number of online elementary schools is increasing with the need for educating children with flexible, accessible, and high-quality home-based learning alternatives for public school children. Elementary school teachers need ways to engage students to participate and learn in the online classroom equal to or greater than in a traditional classroom.

By examining the effectiveness of providing an intrinsically motivating learning experience in online learning and identifying relational academic performance rates, teachers gain the knowledge and ability to meet students' needs to succeed academically. It is imperative

to explore this possibility by researching what has worked in online learning with elementary students and combining those overlapping elements with SDT-based strategies. Students experience intrinsic motivation when they have a supportive learning environment. A supportive learning environment encouraging autonomy, competency, and relatedness is reported to impact engagement and learning (Deci & Ryan, 1985; Kusurkar et al., 2011; Niemiec & Ryan, 2009; Ransdell & Rieck, 2020; Salikhova et al., 2020; Yazdi, 2016). With a supportive learning environment based on SDT factors, it was assumed elementary students would experience intrinsic motivation, connected to academic performance in online learning.

Organization of the Study

The researcher planned to organize the final research study into five chapters. Chapter one introduced the analysis with a problem statement, a description of the study's purpose, and four research questions. This chapter also comprised the study's theoretical framework and significance, followed by definitions of terms and limitations, delimitations, and assumptions. Chapter two included a literature review based on online learning, self-regulation, intrinsic motivation, self-determination theory, and online learning motivational factors considering the traditional elementary in-person classroom and online.

Chapter three elucidated the study's methodology, including setting, participants, sampling procedures, instruments, and measures. Within this same chapter are in-depth details explaining the data collection procedures and data analysis. In addition, a section on ethical issues and considerations taken during the study are addressed and fully explained while providing evidence for the study's validity and reliability. Chapter four included the study's results, including quantitative and qualitative data analysis and findings. The study concluded with Chapter five with a discussion summary of the research and its implications for practice.

Summary

Research on distance learning in elementary education is minimal, thus highlighting the need for best practices in online classrooms. Online learning is growing in development and availability as a response to the COVID-19 pandemic, allowing school-aged children to experience a distance learning education. In the aftermath of that experience, many schools continued the option of online learning while numerous parents committed to online learning once they had a choice between it and traditional school. In addition to safety measures with social distancing, convenience and flexibility are other reasons parents prefer their children to attend school online (Cojocariu et al., 2016).

Students need to be motivated to participate and engage in online learning to increase academic performance in response to the most recent school failures with weak academic performance in online learning. Teachers across the nation personally witnessed students' lack of success in online learning. This study attempted to discover how children successfully achieve academically in distance learning education by exploring students' real-life experiences with intrinsic motivation in online learning combined with correlational academic performance rates.

CHAPTER 2: REVIEW OF LITERATURE

The review of literature focused on online learning in elementary schools in connection to successful learning strategies and motivational factors impacting academic performance and effective educational practices. Knowing there was a struggle to meet the needs of online learners, the researcher examined empirically based best practices for teaching students online in elementary school. In the available literature, the research has mostly been limited to studies focused on technological platforms and e-learning tools and lacks information on instructional strategies for teachers to use.

The researcher began by examining peer-reviewed articles based on the history of online learning to obtain its origin and better identify the progress in developing online learning education for elementary schools. By starting with history, the researcher discovered missing evidence for online learning studies related to elementary school. Then, the researcher investigated all online learning, continuously finding most informational studies based on higher education. With that in mind, the researcher continued to research effective educational results for online learners at any age which led to a common motivational factor. Within the research reviewed, there was consistent evidence for the need for self-regulated behavioral skills to ensure success with online learning. Researchers consistently demonstrate that self-regulation is connected to successful learning, which led the researcher to examine self-regulation skills with connections to cognitive learning and intrinsic motivation.

The theories behind intrinsic motivation attribute self-regulatory behavior to the satisfaction of human needs identified in self-determination theory (SDT; Ryan & Deci, 2000a). Self-determination theory recognizes the fulfillment of autonomy, competency, and relatedness to develop intrinsic motivation for self-regulating behavior. At the same time, the researcher

identified themes in these studies. There was a thematic focus on intrinsic motivation, self-regulation, and SDT in the traditional elementary school classrooms. The research was extremely limited to these themes as they related to elementary students in online learning. The available evidence suggests that elementary-aged students can develop self-regulatory skills with academic success attributed to an intrinsically motivating classroom environment.

With evidence of SDT-based learning strategies' positive impact on adult students attending online education and on children in traditional elementary classrooms, the researcher combined SDT and intrinsic motivation into the study for examining online learners in elementary schools. There was a gap in available research on a study exploring intrinsic motivation and elementary online learners in correlation with engagement and academic success.

Intrinsic motivation correlates with successful learning. In this study, successful learning refers to high academic performance related to motivation, also known as academic intrinsic motivation. Academic intrinsic motivation is the enjoyment of learning in school characterized by a sense for mastery of skills, curiosity, and persistence while learning different challenging levels of tasks (Gottfried, 1985, 1990; Gottfried & Gottfried, 1996; Gottfried et al., 1994, 1998). This study's objective was to inform educators on how to provide the best practices for intrinsically motivating students academically in online education.

The following literature review was organized according to the main themes and categories the researcher discovered through a thorough examination of peer-reviewed articles on online learning and elementary-aged students. The review incorporated evidence-based research to serve as the foundation for the research methodology. The review also focused on the need for further research to discover what motivates online learners to be successful and reach their optimal levels of learning.

History of Online Learning Schools in the United States

Online learning in the United States began during the early 1990s. According to Barbour (2014), the first online private schools opened in 1991 and the first full-time online public schools opened in 1994 in California. At the same time online schools began in California, an electronic high school in Utah began transitioned to supplemental online courses (Barbour, 2014). Since its beginnings, online learning has developed as a universal means for students to receive education from a distance. Online schools continue to increase across the country as technology advances, Internet access expands, and schools increasingly provide students in public schools with computer devices and Internet connections for use in their homes.

The most recent evidence available for the number of schools offering online learning in the nation is from the U.S. Department of Education 2017-2018 school year report (Taie & Goldring, 2019). From 2017-2018, in elementary and middle schools about 21% of public schools and 13% of private schools offered courses entirely online. During the same year, 30% of public schools offering entirely online courses were charter schools, while 20% were from traditional public schools (Taie & Goldring, 2019). During 2020 at the beginning of the COVID-19 pandemic, 72.8% of students enrolled in online courses in 5,908 postsecondary schools (Taie & Goldring, 2019). In addition, 4% of elementary school students used “digital tools daily for online classes during this time while 67% of students used mobile devices to complete the required course work” (Taie & Goldring, 2020). The National Center for Educational Statistics (NCES, 2020) also reported data for the beginning of the 2020 school year: 67% of students switched to online learning and 59% had computers provided by the children’s school or school district (NCES, 2020). The percentage of online coursework and schooling options reflect the increase of teachers experiencing the role of online instructors with minimal data available

concerning instructional effectiveness in the remote classroom. Ferlin's (2020) research on online learning found a need for common practices for teachers to improve online instruction. With limited data about effective instruction, teachers lack awareness of best practices for online teaching.

Most elementary school teachers negatively evaluate remote learning (Ahn & McEachin, 2017; CREDO, 2015; Fitzpatrick et al., 2020). The data collected from evaluations of online instruction and virtual schools for elementary grade students were negative, reporting a lack of engagement and a need for better instructional methods integrating technology successfully with effective pedagogy and instructional design (Basham et al., 2013; Toyama, 2015). Despite several adverse reports on learning and effectiveness, online learning continues to grow in popularity as an additional choice for elementary education. The progression of online learning continues with a push for personalized and customized education regardless of student location.

The driving force behind the popularity of kindergarten through twelfth-grade online learning is the option provided to students for additional learning options believed to improve the quality of their education. Students who are given the opportunity to choose online learning options with flexibility and high-quality, individualized learning will force other forms of schooling to improve or close due to the fading public interest (Apple, 2001, 2005; Barbour, 2014; Fiske & Ladd, 2000). In addition to providing more options for early education, online learning trends continue to grow due to additional student advantages such as individualized learning and flexibility, which is appealing to busy families (Roy et al., 2021).

Advantages

The start of the 2020 COVID-19 pandemic is not the only reason there is an increase in demand for online learning options for early education. There are recognizable advantages to

online learning versus learning in a traditional in-person school, including flexibility and personalized learning (Cojocariu et al., 2016). Online learning offers students flexibility regarding the choice of location to join classes via the Internet from home and personalized choices for participating and learning with more flexible ways and hours for attending school. Learning online allows students to work simultaneously on several assignments versus more limitations for completing tasks in a traditional classroom (Nokelainen, 2006).

Besides flexibility, e-learning provides a more efficient education with customized learning, methodological diversity, interactivity, collaborative learning, motivation, and differentiated learning (Cojocariu et al., 2016). Learner benefits to online education include access to all learning tools in one setting and allowance for self-paced learning opportunities. The advantages of online learning include offering unlimited variations for teaching content and multiple ways for students to engage in the learning process (Hoskins & van Hoof, 2005). In this regard, Hoskins and van Hoof explained that offering various ways to practice and interact with others while improving computer literacy and career development are other potential advantages for learning in an online environment. With so many various methods available for online instruction, teachers have expansive ways of providing students with an enriching environment for students to learn additional skills for their future.

One of the most significant advantages of online learning is a multifaceted environment with unlimited possibilities for engaging in a wide range of technical and social skills. Online learning is a robust learning environment with the potential to provide unlimited learning tools allowing vast opportunities for instructors to encourage student dialogue and impactful learning if the students can be encouraged to participate actively (Hoskins & van Hoof, 2005). Students' active participation relies on motivation, an ongoing thematic trend in research about online

education. The additional benefits to online learning include bringing together a diverse population of students from different locations in one class with more interactivity and social advantages (Gillies, 2008). The possibility for inclusive interactivity amongst diverse populations is advantageous for learning by promoting a learner-centered advanced means for teaching different students. Increased feelings of acceptance are created in the class by including diverse students from different social and cultural backgrounds, promoting social advantages. Increased student diversity and interaction are beneficial factors that motivate students to learn.

Students' participation and communication can be encouraged through the purposeful use of e-learning tools while creating a positive, socially engaging environment in which all students are encouraged equally to succeed. Mansur (2021) explained that, "In addition to attracting students to learn, their ability to interact with information and communication technology will make students more active with their learning with problem-solving" experiences relevant to real life (p. 173). With different populations in one classroom combined with active collaborative learning, students are encouraged to socialize with others and utilize the types of problem-solving skills needed in the real world. Distance learning is also popular among elementary students due to the additional options for learning that are not as prevalent in traditional in-person schools; for instance, online education offers faster communication via chats and forums and greater accessibility to learning materials (Ferlin, 2020).

Additionally, class materials and resources are more conveniently available at different times in online classes (Safhalter, 2013; Vuksanovic, 2009). In the online classroom, teachers can give instructions with more ease and accessibility than in the traditional classroom, which is limited to one place and time. Students also receive feedback faster through chat or instant feedback in emails or digital management systems such as Google Classroom. While studying

from home, students have greater freedom, providing more autonomy in choices provided for when and how to study. Students also need more self-discipline and motivation to complete classwork independently (Ferlin, 2020; Zenovic & Bagaric, 2014). Greater freedom in studying from home allows more autonomy when choosing where and when to study, but this also requires student self-discipline and motivation (Ferlin, 2020; Zenovic & Bagaric, 2014). Allowing more opportunities for students' autonomy is a positive factor of online learning, but the need for self-discipline has been identified for some learners as a prevalent disadvantage.

Disadvantages

While there are advantages to learning online, others have identified troubling disadvantages including reduced relationships among peers, loss of direct communication, and the inability to immediately collaborate with others (Cojocariu et al., 2016). The reduction of social interaction is the most important disadvantage for students (Cojocariu et al., 2016). Students are not able to socialize as much online as they do while attending classes in person which in turn is leading to feelings of isolation for some (Paulus & Scherff, 2008). Social alienation implies the need for more peer collaborative assignments and group work. Additionally, there were also reported requests for personalized tech support for students as well as an increase in the need for technological education for teachers.

Most teachers need to be adequately trained to conduct effective instruction online. Many teachers know technology but need more experience in the online classroom. Researchers identified struggles with online learning, including a lack of equipment and teachers' knowledge and skills for teaching online. Teachers need more advanced technological information and communication skills for effective distance education (Lee, 2006). Other challenges with e-learning are classroom management issues needing adjustments to better establish quality

teaching in distance learning. Some of the classroom management issues impacting teachers and students include students' lack of software knowledge, limited self-discipline, difficulty managing deeper learning, playing with tablets, disrupting classes, and ignoring teachers' directions (So et al., 2019). These issues impacted the effectiveness of learning and instruction. Overpopulated classes, longer lessons with less information, and little social contact between peers also cause disruptions in learning (Ferlin, 2020). Larger class sizes allowing less interaction with peers revealed more social impediments to distance education. While classroom management is a significant concern, there are also indications that not all students are capable of the self-discipline needed to learn online, which may be attributed to reports of unsuccessful students. In addition, Ferlin identified that not all students are equally successful with self-discipline, indicating the need for effective common practices for teachers to instruct in the new remote environment. Not all students are equally capable of self-discipline, so differentiated support is an implied need for more successful learning.

In opposition to research claiming to learn online has the potential to increase students' engagement, others reported weaknesses in students' participation, especially with younger students in early educational classes (Gillies, 2008; Hoskins & van Hoof, 2005). Engagement is one of the greatest concerns for online instruction: many students do not engage in synchronized lessons or participate in collaborative assignments. The negative impacts of the online environment include lack of body language, inflexible reliance on technology, lecture-dominated instruction, and reduced access to onsite school resources (Gillies, 2008).

While attempting to engage students collaboratively, teachers often use collaborative synchronous group work, which can be challenging for students and requires trust among peers. Students' challenges working online include miscommunication, scheduling problems, students'

accountability, and a need to become an active learner capable of contributing to team tasks (Liu et al., 2010). Teamwork requires trust and open communication for relationships among peers to develop. Extensive literature showed that trust is the underlying key determinant for positive peer relationships and team development (Du et al., 2018). It is difficult to build this trust in an online setting, more so when the teacher is unfamiliar with technology and the students do not already know one another. In a traditional classroom, this happens much more organically in a way that does not require much forethought or training.

Other weaknesses in online schooling include students' attendance and participation. Accountability is needed for successful online schooling, including enforcement of policies for work completion, attendance, and participation, as well as parents' support (Wagner, 2021). While additional forms of accountability are needed in distance education, there is also a need for more research examining these forms of regulation for participation to see what works effectively over time. It is important to examine the long-term impact of distance learning to better understand how to address these reported disadvantages (Ferlin, 2020). Additional problems with online learning noted within include cognitive overload and longer lessons with less informational impact (Ferlin, 2020). Also, not all students are equally capable of the self-discipline needed to learn online; consequently, there is a need for teachers to encourage fidelity to the instruction and structure for online learning (Ferlin, 2020). Common effective practices are needed for online instruction; yet, few have been identified for elementary online education.

Although there is a lack of studies specifying effective instructional practices for engaging elementary students online, there are proven indications for successful learning concerning student ability to develop self-control and personal motivation in traditional school settings and with adults online. Developing and maintaining self-controllable behaviors and

motivation are proven valuable assets for academic success in e-learning. Motivation is also an essential factor for the success of online learning environments (Artino, 2008; Keller, 2008). In most studies, motivation is a critical trait for successful online learning.

Online Teaching and Instruction

When it comes to online teaching with a direct impact on students' performance regardless of students' age, there are common findings in successful teaching strategies and students' behaviors. Teachers who optimize their work, adjust instruction, maximize their use of technological learning tools, use versatile technologies to create individualized learning paths while varying teaching methods, increase the speed of learning, and personalize the learning process for students can help students to be successful (Shpoloanskaya & Serdekina, 2020). Teachers can use e-learning systems, such as Online Web Learning (OWL), an online learning management system, to individualize instruction and create learning paths for each student. Learning pathways are a series of learning activities that have a start date, adjusted assignments, and tasks to guide students' proficiency—all of which can be individualized to meet the academic needs of each learner. A learning pathway is a chosen route taken by learners who are guided by a range of e-learning activities, thus building their knowledge progressively (Niedderer & Goldberg, 1995). Learning pathways are individualized tasks targeting students' specific needs, which successfully personalize their learning.

E-learning tools used for online teaching including individualized and personalized instruction can increase students' engagement (Fox, 2018). Other recommendations for improving engagement include online tools like learning platforms, collaborative bulletin boards, and game-based instructional tools (Hoskins & Van Hoof, 2005). While some of these tools proved initially engaging, reports show many students lost interest after little use. E-learning

tools can also include digital platforms for assignments and communication, as well as game-based instruction.

Some educators offer game-based instruction assuming students are more engaged with video game-type methods of learning. Malone and Thomas' (1981) model theory of intrinsically motivating instruction concerning motivation in electronic game-based instruction (Mozelius, 2015). Malone and Thomas noticed that students were initially motivated to participate in game-based learning, but this type of instruction lacks specified goals with simple skill levels. Game-based learning also tends to discount different levels of learning. While Malone and Thomas' model names intrinsically motivating instruction with cognitive advantages, including challenge, fantasy, and curiosity, which most video game-based tools encompass, the use of games in online instruction was not proving completely successful (Mozelius, 2015). Students seem to enjoy game-based learning, but lesson objectives are not always met. While there has been an increase in game-based learning in the 21st century, implementation has not often been in alignment with learning objectives (Kapp, 2012). Often, teachers use gamification to engage online learners without indicating learning outcomes or instructional purpose. Therefore, while students participate in electronic games during online classes, they be engaged but were often experience misdirection, lacking instructional meaning. In addition, Rivero (2005) found it necessary for teachers to adjust instruction by customizing digital content for each student by allowing them to work at their own pace. There are indications for teachers who need to balance the use of technological instructional tools with effective teaching practices.

While some studies suggested the use of e-learning tools is necessary to maximize learning online, others found evidence showing teachers needed to focus less on the technological aspects of the virtual classroom and more on curriculum and instruction. Mansur

(2021) pointed out that more emphasis should be placed on learning approaches and instruction than technology integration. E-learning tools are essential for online instruction but are often the instructor's primary teaching and planning focus. Some studies found that students are less engaged when teachers focus more on technology than content instruction.

Online learning requires the use of technological tools, while research also indicated a needed focus on purposeful subject matter instruction. Virtual teachers need to focus more on the subject matter and instructional methods versus technological focuses (DiPietro et al., 2008). Studies like the one conducted by DiPietro et al. promoted teacher reexamination of the curriculum they are teaching with less focus on technology and digital tools (Mansur, 2021). Many teachers have been too inundated with the demand for increased implementation of random technological tools that they were distracted from the subject matter they teach (Lee, 2016; Ferlin, 2020). This distraction demonstrates ineffective academic instruction with less content focus and more focus on e-tools.

Notably, the most useful and engaging tools with the potential for sustaining interaction online included learning paths, videos, and discussion boards, which requires teachers to establish purposeful reasons for using these tools as well as clear directions with meaningful objectives for class subjects. These online instructional tools add variations for learning beyond traditional schooling limited to teacher-directed instruction and can be student-engaging, but at the same time, there is a high reliance on the effectiveness of teacher delivery and instruction. For effective teaching instruction, there needs to be structure, consistency, and clear communication in the class, which all imply the need for fulfilling SDT-based factors for motivation while reaching diverse students' capabilities.

Depending on teachers' competencies and awareness of cognitive diversity, online

classes offer students many possibilities for reaching higher levels of cognition. Some teachers found success in differentiating levels of instruction using technological tools (Crompton et al., 2019). Teachers must learn to more actively manage students in online learning than in traditional classrooms while incorporating variations in strategies. Online teachers must become facilitators helping students to build on individual learning trajectories (Sandybayev, 2020).

While students can work at higher levels of cognition, many class activities do not engage students enough, so students work at lower levels than which they are capable. It is therefore important to further investigate how to motivate students to higher level learning in e-learning classrooms. Stearns (2017) linked students' role as active and engaged learners to cognitive development for deeper levels of knowledge retention. Increased pedagogical opportunities for students learning online to actively produce their knowledge using higher cognitive skills (Crompton et al., 2019). Online learning can help students to reach optimal levels of learning when they are engaged and effectively guided by adequate instruction, meeting the individualized needs of online learners. Determinants of online learning success need to be assessed validly with consistency while adapting to online methods for assessments and data collection.

Indicators for measuring the effectiveness of online programs are similar to assessments used in traditional K-12 schools. These available indicators assess academic achievement and student satisfaction. After examination of these assessments, Rice (2006) wrote, "The effectiveness of distance education has more to do with who is teaching, who is learning, and how that learning is accomplished and less to do with the medium" (p. 442). These studies showed that younger students require even more support and additional supervision and guidance with simpler instruction. There is little research measuring the effectiveness of online learning

with primary school children (Huett et al., 2008). Older children who are successful in learning online have common characteristics including autonomy, metacognition, self-regulatory skills, positive self-efficacy, motivation, and internal locus of control (Huett et al., 2008). These characteristics are common in most research assessing students' academic success in online learning.

Communication is also an important factor for academic success in online classes. Cognitive and emotional support for students can improve with increases in communication necessary for successful e-learning (Rivero, 2005). Rivero suggested that schools should focus on improving communication between parents and teachers. Communication is related to connectedness, which was an identified interrelated necessity for student development of intrinsic motivation. Effective instructional strategies influence online learners' academic success, but there is a need for verifying the specific ways to encourage learner motivation and engagement (Gillies, 2008; Huett et al., 2008; Mansur, 2021; Marks, 2016). From existing studies, several thematic factors have emerged, including the impact of teachers' role on students' academic success and behavior.

Online Teachers' Role

Instructors are one of the most influential factors for online learning success. Keengwe and Kidd (2010) identified four categories to explain online instructors' role: pedagogical, social, managerial, and technical. Successful online instruction is attributed to placing much greater emphasis on pedagogy as the needed focus versus technology. Pedagogical strategies can be categorized as community, technology, engagement, meaningful content, and supporting and assessing students. Instructor roles and pedagogical strategies need to be adapted for online learning with teacher adjustments to curriculum and instruction.

Teachers must shift their instruction with technological changes and online learning. As technology shifts, it also requires teachers to change their instruction. With changes to the learning environment shifting from a traditional classroom to a virtual platform, teachers must inevitably modify how they teach. Teachers need to develop skills for facilitating effective peer interactions and instructional design (Easton, 2003). Shifts to online instruction require student-centered focus with collaborative tasks and active learning (Sandholdz et al., 1997). Curriculum knowledge is critical for teachers shifting instructional methods. Teachers changing their role to online instructors need to adapt the curriculum to the new learning environment, which requires full knowledge of the curriculum. Lee (2006) described teacher instructional shifts, “Just as in any instruction in traditional classrooms, content came first, and then technology entered the picture, rearranging the elements considerably” (p. 101). Teachers must implement effective instruction by teaching online classrooms while simultaneously using necessary e-tools for lesson delivery.

This new adaptation for instruction requires teacher competence in instruction as well as technology, more so than in-person classrooms. The quality of online teaching is mostly determined by instructors’ decisions, knowledge in technology and curriculum, and communication skills (Marks, 2016). Quality online education needs to provide students with technological instruction in basic computer skills and online learning communication tools. In online elementary schools, teachers need to help children develop computer literacy skills and there needs to be close communication between students and teachers (Burdina et al., 2019). Even students who are familiar with online learning have a psychological need to rely on teachers’ direction (Burdina et al., 2019). Students need consistent and clear communication with their teacher necessary to maintain student engagement. Teachers’ communication has a direct

effect on students' performance and was the most important predeterminant for increasing students' interest and self-confidence in learning online (Burdina et al., 2019). While there is evidence that students' self-confidence is impacted by teachers' communication, teachers continued to struggle with not being able to have full control over students' interaction during online classes (Burdina et al., 2019). These research results imply that incorporating social activities during asynchronous class time is critical for increasing motivation and success.

Incorporating and maintaining successful instruction online requires teachers to use valid measures for collecting data to determine student progress. Ongoing assessments and communication about student academic progress proved valuable for increasing student academics and engagement. Lee (2006) validated the need for continued progress monitoring with feedback and assessments administered regularly to follow the progress and provide learning motivation to students when needed. In addition, Lee observed that students' engagement in self-paced learning activities led to motivation due to their feelings of success, increasing independent learning abilities. The more valuable feedback and progress monitoring students received, the more students were able to gauge their learning and develop independent learning skills needed for online learning. Some online learning provides more time for students to learn on their own and independent learners are more capable of engaging in self-initiated learning tasks. Students who are not capable of independent learning often do not utilize the independent time during the school day necessary to fulfill all the requirements in online classes.

Independent learning is a necessary practice for all online schooling and requires a level of student self-directedness. Teachers must be aware of the need for student self-directed skills and plan for teaching practices that encourage these skills that are more necessary than in a traditional classroom (Keengwe & Kidd, 2010). Students' self-directedness is more necessary

than in the traditional classroom due to more asynchronous work required online. Therefore, teachers need to plan more for independent work in balance with synchronous collaborative activities as well. A keen balance is needed because students need different ways to engage in synchronous work cohesively, along with making teacher and peer connections. These connections are encouraged through online synchronous and asynchronous interactions. The development of community, peer interactions, and teacher connections as key factors for successful learning (Wagner, 2021). Impactful online educators must, therefore, not limit instruction to independent learning but also need to provide structured lessons that encourage open communication.

Communication is a key factor for developing motivation to learn and requires different ways for student interaction during distance education. Communication must be encouraged during face-to-face lessons along with the independent practice, such as independently responding to a peer's discussion post. While using telecommunication tools to support student collaboration, teachers need skills to increase peer interaction and communication (DiPietro et al., 2008). Communication tools to encourage collaboration include learning management systems such as Google Classroom, videoconferencing, and social media applications (Mansur, 2021). One highly recommended platform, according to Jaber et al. (2018), is Interlace (Interactive Learning and Collaborative Environment). Interlace provides teachers with the ability to modify discussion groups to support real-time classroom interactions online (Jaber et al., 2018). Mansur (2021) also encouraged teachers to familiarize themselves with communication tools, including print media, videos, e-mail, computer conferencing, and multimedia. Communication tools support students' interaction, which is a key factor for teachers' success.

Communication is at the heart of providing a safe learning environment for online students wanting to participate and collaborate with others. Students need to feel welcomed, valued, and accepted to be willing to communicate in the online classroom. Students' communication among peers is vital for successful learning and alleviates isolation (Marks, 2016; Moore, 2014). Strategies for encouraging successful peer communication include collaborative assignments with peer feedback, virtual meetings, instructional guides with examples, structured classes with predictable routines, clear directions, and teacher-directed videos. Virtual synchronous meetings on platforms such as Zoom "Creates relatedness, a principle from SDT, encouraging intellectual closeness" (Ransdell & Rieck, 2020, p. 88). In addition to using Zoom, teachers should include a visual of their face on video during meetings to increase social presence while also allowing students to use the chat feature, video camera, and microphone and using the Zoom polling feature, breakout rooms, and student-led lessons (Ransdell & Rieck, 2020). All these strategies require more teacher-explicit directions for assignments and tasks with clarity and structured lessons necessary for motivating the learner needing a balance of independent work and collaboration.

Motivating students to learn in different ways needs to be planned and prepared for differently than in traditional classroom settings. Students believe that the relevance and value of class activities is just as important as their interest and enjoyment of the task (Hartnett et al., 2011). Situational factors that influence students include meaningful choices and ongoing open communication. Hartnett et al. believed there is a need for further research to be conducted on students' motivation to learn in online learning environments. Most of the available research revealed that online learners need motivation and teachers play one of the most valuable roles in encouraging, fostering, and growing students' motivation.

There are specific personal teacher attributes consistent with successful student learning online, including lesson preparation, creative teaching, treating students fairly with respect, and having high expectations (Marks, 2016). Online instructors must skillfully consider their curriculum and instructional decisions while adapting both to meet the needs of small and large groups as well as individuals. Teachers must set clear expectations for student and instructor behavior with the use of a quality delivery system (Marks, 2016). Curricular and instructional design adapted for the needs of the online learner are essential for teacher effectiveness with more focus on content than technology. At the same time, online instructors need to provide a comfortable and nurturing virtual classroom by skillfully balancing students' need for motivation, a sense of community, and self-regulation. Teachers must also aim to provide independent learning tasks as well as collaborative learning opportunities with meaningful purpose-driven curriculum and instruction.

Class Curriculum and Instruction

There is importance for fulfilling appropriate curriculum and instructional needs for the online learner in a meaningful and effective way. Jaarsom et al. (2015) identified the need for teachers to emphasize how to instruct over what to teach. Teachers need to be keenly knowledgeable about the curriculum by adjusting it to fulfill the unique needs of online learners and maintaining a pedagogical focus versus a technological one. Technology must be integrated with effective pedagogy and instructional design (Basham et al., 2013; Toyama, 2015). Integrating technology into instruction requires the use of certain media and modes with effectiveness dependent on teacher competence. Successful online assignments need to reflect students' competence aligned with technology in lessons (Mansur, 2021). Some students are not as knowledgeable or lack experience with technology and many need assistance or

individualized instruction to comprehend a distance learning task. By meeting students at their level of competency with technological learning tools, students become more engaged in the learning process because they are better equipped to fulfill the requirements.

There needs to be a greater focus on the content being taught and technology must be strategically used to support purposeful learning objectives. While computer literacy is important, it is not the most important part of learning online. Assignments need clarity and a purpose that is easily identified and understood by students. Instruction needs to be adjusted to meet the needs of all student levels while maintaining high expectations for all. Activities should not be too challenging or too easy for students (Orsini et al., 2015). Teachers need to provide opportunities for relevant learning with meaningful curricular topics. Interesting topics promote purposeful meaning for a diverse range of students and reach them at an emotional level.

For meaningful instruction, teachers also need to vary assessment strategies to increase personalization and student ownership of their learning. Using assignments with self-initiated projects, such science, technology, engineering, and math (STEM) curriculum with project-based learning (PBL), is effective instruction (Fulton et al., 2020). STEM curriculum is known for encouraging engagement, creativity, and critical thinking. Fulton et al. reemphasized this point, explaining it is imperative that students engage in STEM tasks in online learning classrooms just as students do in traditional classrooms to maintain educational equity and preparation for future careers. PBL is an instructional method for teaching students to take control of their learning by creating a project independently and collaboratively. Both STEM and PBL are encouraged for effective personalized learning in remote classroom settings.

Effective Instructional Strategies

Studies of effective online instruction have revealed that the strategies and techniques

applicable to adult learners may also influence children's capacity to learn. Most scholars have examined effective teaching and learning in online classes in higher education and among adult learners. Within behavioral studies, researchers have found that the capability for success online is correlated with cognitive and behavioral factors associated with academic success. Student-centered learning provided through various instructional techniques based on cognitive learning research appeals to students' interests and learning ranges through relevant and meaningful instruction. Instructional techniques and strategies that support students' success in online learning include instructor support, emotional connections, student choice, assignment relevance, and personalized instruction (Lee et al., 2015). Methods of instruction influencing students on a personal level led to engagement and motivation because students are actively involved in the learning process and feel the assignments are relevant and meaningful to their life.

Personalized Instruction

Personalized instruction is a key factor for students to feel excited to engage in class discussions and schoolwork. Students are more motivated to invest in completing the work when they feel personally connected to content and assignments (Patall et al., 2010). One way to personalize instruction for students is by assigning self-assessments along with classwork. Self-evaluation is an engaging way for students to feel motivated while better understanding their own learning needs. Students who participate in their own evaluations and assessments while reflecting on the next steps and goals—in other words, assignment reflection instead of assignment completion—gives students with autonomy over their learning (Boudreau, 2019). Self-reflective assignments create meaning that leads to motivational development.

Teachers' adaptation to students' learning needs is essential for providing autonomous instruction and allowing personalized self-reflection. Learner-centered effective practices include

creating positive relationships and a welcoming learning climate (McCombs, 2015). McCombs further explained, “The role of climate in supporting student development and adapting to class learning needs has confirmed that caring teachers are compassionate, interested in, actively listen to, and get to know the gifts and talents of individual students” (2015, p. 61). A supportive climate includes supportive teachers who show interest in students personally and academically. Students respond in a positive way when teachers validate their academic abilities and nurture their intellectual competence, and, at the same time, want their class peers to succeed (McCombs, 2015). Students require teachers’ recognition of their academic progress, which in turn encourages self-motivation. A supportive class environment, including a teacher who responds positively with encouragement for all students’ attempts to learn, is a key component for reaching students on a personal level. The teacher is in control of leading the students in academic progress with personalized recognition for their efforts.

Acting as lead facilitator of the learning process, teachers must navigate the class while allowing students choice and control in their own learning goals. McCombs (2015) indicated that “self-motivated learning occurs only when learners possess choice and control about how, what, and when to learn while encouraging personal challenge and responsibility” (p. 61). An encouraging self-motivating environment often includes responsive teaching, method placing the students at the heart of the learning objective (Jaber et al., 2018). Responsive teachers constantly adjust instruction around the direction the students take in their learning. Responsive teaching encourages active learning and engagement needed for self-motivation.

With appropriately chosen curriculum and instructional methods, the relationships between students, teachers, and peers can positively influence students despite studies claiming online learning is less social than the traditional classroom. The social alienation reported in

online learning perhaps makes building relationships and providing opportunities for peer communication more important to consider in distance learning. Personal attributes contribute to positive social interactions as an online learner connected to behavior.

Students' Behavior and Motivational Influences

Many scholars have commonly identified specific attributes of an academically successful online student. These attributes include self-regulatory skills and independent learning capabilities, which are all impacted by the teacher and instruction. Keengwe and Kidd (2010) recalled that most online instruction encompassed students working independently and engaging in learning materials as an individual practice. Students must be prepared for independent work needing instructional management and support. To participate in synchronous class activities on Zoom and online learning platforms like Google Classroom, students also need adequate awareness and the ability to use technology. Students need to be able to comprehend and use the technology needed to participate in online learning classes. Beliefs in capability and knowledge in using technological tools are believed to be related to online learners' academic performance (Moos & Azevedo, 2009). Because most online classwork requires independent thinking and learning behavior, students must be capable of independent work.

Since students must engage actively in their learning and complete independent work, the earlier concerns mentioned in the disadvantages imply the need to research the development of self-directiveness, which is explained in different learning theories. Students need to actively participate in learning (Mansur, 2021). Maintaining active class engagement in course lessons and assignments enables student success with internal motivational factors (Lee & Choi, 2011; Lee et al., 2015). While active engagement can result in motivation and success, some researchers question students' readiness and capabilities for technology and self-regulation

depending on their developmental stages (Wagner, 2021). Some research has addressed some developmental factors and self-regulation related to different ages. However, few researchers have examined the interrelations amongst multiple cognitive and motivational constructs concerning self-regulation. By considering the necessary skills for successful students requiring self-regulatory skills, teachers need to look to motivational theories to encourage independent learning. There is a need for more specific ways to promote the development and mastery of self-regulation skills essential for elementary students to learn online successfully. These gaps revealed a need for exploring how students experience motivational behavior related to self-regulation and how these skills are most effectively supported in the online classroom. Exploring the relationship between cognition and motivation reveals factors for effective learning.

Cognitive Learning and Theories of Motivation

Scholars exploring online learning and its effectiveness on academic performance indicate a relationship between intrinsic motivation and academic success. SDT relevancy relating factors can be attributed to promoting intrinsic motivation in students. Online learning requires social, emotional, and cognitive support and the development of logical intelligence requires a need for a specific focus on the process of learning. Hayward (2004) explained, “Intelligence must develop in a transactional relationship with motivation and cognitive processing leading to effective perceiving, thinking, learning, and problem-solving” (p. 6). Teachers need to emphasize independent learning tasks with relevant assignments to increase cognitive learning skills in children. To develop ability intelligence, cognitive processes, and motivation, teachers must apply formal reasoning processes for students to use for completing assignments and coursework (Hayward, 2004). Cognitive development must be considered for students to experience motivational learning.

Teaching with the awareness of cognitive learning theory relies on including student logical thinking processing to help children successfully develop cognitive strategies to learn different content in varied environments. These ideas are relevant to online learning, requiring more adaptive skills for learning in a less familiar virtual environment. There are universal traits among students who are more academically successful online. Student personal attributes include highly self-regulated behavior and independent learning skills (Kauffman, 2004; Wang, 2011). While e-learning encourages self-regulated learning, only some students display the skills necessary to engage in independent learning because they still need to develop this ability.

Online learning needs to be explored to further assist in learning theory by informing instructors with better instructional practices. Effective learning in early education is impacted by brain-researched-based instruction created by learning theory. Neurological systems are responsible for motivational behavior and most goal-oriented behavior (Berridge, 2004; Berridge & Kringelbach, 2015). Goal-directed behavior is critical for developing independent working skills needed for completing most distance classroom assignments. Knowing that e-learning supports self-regulation by encouraging children to work independently and take control of their own learning, online educators must understand and support the development of self-regulation (Boticki et al., 2015). Self-regulation behavior is mostly impacted by intrinsic motivation.

Self-Regulation

Self-regulation refers to behaviors explained by the cognitions and behaviors that coincide with achieving personal goals (Bradley et al., 2017; Gazzaniga et al., 2010; Zimmerman, 2000). Most studies attribute self-regulation skills to be highly influential for an online learner's achievements. As a case in point, Sun et al. (2019) conducted work on a small class of online students where they determined that "intrinsic motivation," synonymous with

self-regulation in their study, was the “main determinant of ones’ self-organized behavior” (Morgan & Hunt, 1994). If online learning can continue fostering self-regulating behavior, students should be more successful in the long run. E-learning supports students’ self-regulated learning and enables students to take control of their learning (Boticki et al., 2015). Online learners can experience variations of engagement through technology while learning different ways to complete work and participate socially and independently.

The need for independent practice skills in online learning increases with age groups, as does the ability to self-regulate. According to Wigfield et al. (2011), the development of self-regulatory skills and influential factors occur throughout the school years and changes over time. While there is a positive relationship between motivation and effective instructional strategies, it is limited to older children, middle school, and higher levels. Performance goals are more evident in older children, especially after middle school (Anderman & Anderman, 1999), and older students are more motivated to learn for grade evaluations than to gain skills and knowledge. Students may be more likely to engage in self-regulatory strategies when they know task completions are grade-based and less willing to engage when a grade is not attached (Wigfield et al., 2011). The possible hindrance of grade motivation implies the need for more self-engaging assessment options. If older students are less able to be intrinsically motivated, this information implies even greater importance for teaching younger students intrinsically motivating instruction.

Students can experience practical and meaningful self-regulation skills if they learn through multimedia variations. While students displayed success with self-regulated learning, some still struggled with independent learning due to difficulty with attention, retaining information, self-awareness, and motivation (Zimmerman & Moylan, 2009). Independent

learning is encouraged with self-check assessments combined with immediate feedback while indicating practical uses of instructional scaffolding. Lee (2006) identified various positive methods for encouraging students' ability for independent learning. These methods included cooperative learning groups, integrating multiple subjects, and keeping student progress logs. Student logs gather qualitative data on student self-perception and attitudes contributing to progress (Lee, 2006). The best motivational methods impacting learning are a combination of independent progress monitoring and cooperative learning.

More studies identifying correlations between motivation and online learning indicate additional methods for independent learning. Lehtinen and Virii (2017) identified six types of guidance necessary for motivating students during e-learning: process constraints, performance dashboards, prompts, heuristics, scaffolding, and direct informational presentations. Learning scaffolds adjusted by teachers serve student needs and provide more opportunities to develop self-regulation. Students need to develop self-regulated learning skills over time, with scaffolds progressively removed as students take charge of their learning and become active independent learners (So et al., 2019). Motivating instructional strategies all help fulfill the needs indicated by SDT to encourage students' development of self-regulation.

The development of self-regulatory behavior is explained through SDT, a theory many studies have built their work exploring for effective online learning. SDT is a behavior theory that identifies human needs that, once met, lead to the development of intrinsic motivation. Intrinsic motivation is essential for students' success in learning online, requiring specific teaching and learning strategies to enable students to learn proficiently in a virtual setting. Since motivation is necessary for learning because it further validates the need for a theoretical framework based on SDT and the exploration of students' motivational needs to fulfill studies

lacking in elementary online learning. SDT-based instructional strategies successfully promote academic achievement in traditional elementary classrooms. Therefore, these studies imply that the same strategies have the potential for student achievement learning online.

Engagement is an identifiable researched factor connected to developing intrinsic motivation. Motivation is a behavior based on students feeling motivated to interact as active participants in online discussions and lessons as well as maintaining the completion of independent learning tasks. Motivation is the driving force behind students' success online, more specifically intrinsic motivation since online learning is mostly done independently.

Intrinsic Motivation

Intrinsic motivation is vital in effective learning, especially in distance learning. Defining intrinsic motivation as it relates to online learning is also essential. Luria et al. (2021) defined intrinsic motivation concerning distance learning; "Intrinsic motivation is when behavior is performed volitionally as a result of fundamentally personal interest and importance" (p. 6). Many studies exist examining the influence of intrinsic motivation on the motivation to learn. McCombs (2015) found that "Theories of intrinsic motivation confirm that nurturing competence, autonomy, and relatedness reduces alienation and enhances motivation and engagement in any age population" (p. 62). Instructors have more success teaching by using instruction that meets students' individual and social needs.

Teachers play a vital role in promoting intrinsic motivation by supporting students' need for autonomy, competence, and relatedness (Bolkan & Goodboy, 2015; Reeve & Jang, 2006). McCombs (2015) explained that students tend to seek peer collaboration, and teachers who provide opportunities for students to connect easily are perceived as most effective. Making social connections motivates students to learn while seeking support and guidance from peers

and teachers. Students need to feel in control of their learning and capable of reaching optimal levels of learning with varied assignments with teacher-supported high expectations. McCombs' findings reveal that online learners are internally motivated and appreciate the freedom to learn with differentiated educational resources provided, enabling choice in topics related to student interest and future goals.

While several theories explain intrinsic motivation, some experts in the field of cognitive education believe external rewards solely drive behavior. Some of these external rewards include money, status, or food. Motivation may indirectly foster academic achievement by promoting the use of cognitive strategies (Metallidou & deVlachou, 2007; Pintrich & de Groot, 1990; Wigfield et al., 2011; Wolters & Pintrich, 1998). Although there are differences in opinions and theories, most identify intrinsic motivation as a form of cognitive development and identify cognitive learning theory and behavioral studies explaining the development of motivation.

Human behavioral studies elucidate motivational factors specific to the online learner, with most studies exemplifying adult learners and some of them involving younger ones, but all show links with intrinsic motivation and student academic performance. Universal factors of intrinsic motivation proving to impact learning achievement include enhancing learner participation, academic persistence, and learning skills (Kwon et al., 2001). Each of these learning skills requires self-regulatory behavior.

Self-regulation skills are correlated with the development of intrinsic motivation as a key determinant for its development. The motivational factors that influence students' learning are based on intrinsic motivation. Intrinsic motivation has more influence on self-directed behaviors than extrinsic motivation. Students who are highly driven by intrinsic motivation are successful in participating and sharing their knowledge with others in online classes (Hau & Kim, 2011;

Lou et al., 2013; Sun et al., 2019). Success in participation and engagement online if they are strongly intrinsically motivated individuals. Yet, here are different reasons and ways for motivational development mostly attributed to SDT.

Intrinsic motivation in education is most explained by SDT, a theory based on cognitive learning and brain-based learning. Several scholars examining motivation in online learning have used SDT as a theoretical basis (Chen et al., 2010; Giesbers et al., 2013; Hartnett et al., 2011; Rienties et al., 2012). Understanding the significant impact of SDT and the relationship between intrinsic motivation and positive learning requires comprehension of the theoretical foundation. SDT's impact on learning must first be understood with the psychological needs of elementary students according to cognitive behavior and the definition of intrinsic motivation.

Theoretical Framework: Self-Determination Theory

Literature suggests that studies in educational psychology play an important role in understanding how learning works to better comprehend and create the necessary instruction for providing optimal learning in the online classroom. Based on psychology and neuroscience, there are indications for focusing on students' cognitive processing during learning, with instructional techniques supporting this processing (Mayer, 2017). Instructional methods affect learning, with implications for improving classroom practices and design (Mayer, 2017). Mayer explained that there is a need for determining impactful correlations between brain activity and motivational levels related to metacognitive strategies. To increase students' motivation, it is vital to understand students' cognition related to learning.

Understanding intrinsic motivation related to early education finds an explanation in the developmental foundation of theories. There are influential primary factors for motivating learning correlated to metacognitive or brain-based learning strategies. The studies revealed the

need for a theoretical framework for study intertwining intrinsic motivation and SDT based on cognitive learning. According to SDT, there is a correlation between children's cognitive processing and psychological needs. Brain processing and psychological needs represent a reciprocal relationship impacting one another, according to learning theories and brain research-based instruction. Students have their own unique learning structures that need to be identified to meet their true needs. Students' learning needs are identified by motivational theories.

Learning theories are categorized by behaviorism, cognitivism, and constructivism. To better understand the human motivation for learning, there has been a shift from what was once a behaviorism focus to cognitivism, resulting from the need to explain how individuals process information. Originating from the failure of behaviorism, cognitivism began to explain how and why people make sense of and process information (Yilmaz, 2011). The cognitive approach informs the way children learn by making meaningful connections with their prior knowledge and personal interests. Effective instruction is based on students' existing mental structures or schema (Ertmer & Newby, 1993). Getting to know students at an academic and personal level are ways to account for students' existing knowledge and perceptions.

Different motivational theories all identify human needs required for the development of intrinsic motivation. Cook and Artino (2016) compared different motivational theories and identified concept-related beliefs within these theories, such as competence, value, attributions, and cognition. All these beliefs indicate the need for Deci and Ryan's (1985) development of SDT, which provides explanations for how to encourage intrinsic motivation. Theories examined by Cook and Artino that are related to motivation include goal orientation theory, social-cognitive theory, cognitive evaluation theory, and SDT. Cognitive evaluation theory is a sub-theory of SDT, while each of these theories states that human cognition influences perceptions

and motivational controls needing reciprocal interactions. There is an additional need for further studies on motivational manipulations in the educational setting because research is limited in volume and rigor (Cook & Artino, 2010). With human cognition as a key influential factor for the development of SDT, it is important to further examine its' influence and relationship to motivation and indications of student influence, such as personal beliefs for success.

Acknowledging that cognitive influences do impact motivation, as demonstrated by SDT, motivational theories recognize cognitive learning theory as the root of SDT.

Cognitive Learning Theory

Cognitive learning theory is a basis for theories of intrinsic motivation. Intrinsic motivation is a behavior often formed from the need for psychological needs to be met. Intrinsic motivation was inspired by theories of effectance (White, 1959), personal causation (De Charms, 1968), competence, and self-determination (Deci & Ryan, 1985). Cognitive learning theory led further theorists to the development of SDT, explaining how intrinsic motivation developed.

Many theories explain intrinsic motivation as behaviors driven by nothing more than the act of doing a particular action. People's personal needs and drives are recognized as the most common motivational forces for people to do something, like finish a homework assignment. Needs and drives are defined as innate factors humans experience to survive. The intrinsically motivated student would do the assignment merely for the fulfillment of completing the assignment for a sense of well-being and without external influence.

While many theories explain intrinsic motivation, the most common theory explaining the motivation to learn online is SDT. Notably, SDT is the most recognized theory of intrinsic motivation based on human needs and the drive to live. According to some experts, all behavior is driven by external factors. External factors in the early elementary online classroom include

rewards such as earning class points, electronic badges, and certificates. Studies indicate that intrinsic motivation is more critical for online learning success than externally driven rewards (McCombs, 2015; Widjaja & Chen, 2017; Wijsman et al., 2019). With intrinsically motivated behaviors, the activity is the reward. While psychological studies indicate people have biological needs to grow and live healthily, they also have psychological needs to be fulfilled to grow mentally and be active participants in their learning. The psychological need for autonomy, competence, and relatedness positively affects intrinsic motivation (Boudreau, 2019; Deci & Ryan, 2017; Evans & Boucher, 2015; Niemiec & Ryan, 2009; Salikhova et al., 2020; Sun et al., 2019). Knowing that the psychological needs for autonomy, competence, and relatedness positively affect intrinsic motivation makes these critical components considerable.

In the online classroom, learning requires intrinsic motivation to become an independently self-regulated student capable of successfully learning in the online environment. Salikhova et al. (2020) found conflicting research results on the influence of SDT factors on online learning, while some studies show satisfaction of basic needs strengthened by self-regulatory motivation associated with higher learning outcomes. Because online learning requires self-regulation, which is central to SDT, the role of internal motivation has led to an exploration of intrinsic motivation for effective teaching and instruction. Regardless of educational contexts, intrinsic motivation contributes to engagement and optimal learning (Niemiec & Ryan, 2009; Salikhova et al., 2020). Online classes are a very different context for most young learners and benefits from intrinsically motivational learning techniques.

Self-Determination Theory

SDT is based on cognitive behavior theory, which explains that there are three basic psychological needs for students to be satisfied to achieve intrinsic motivation and internalize

feelings of autonomy, self-regulation, and value. These psychological needs inherent to intrinsic motivation are the need for autonomy, competency, and relatedness (Deci & Ryan, 2017; Niemiec & Ryan, 2009; Orsini et al., 2015; Salikhova et al., 2020; Sun et al., 2019). The fulfillment of these needs encourages the development of self-regulation. Self-regulated factors of motivation influence deep learning, academic performance, and well-being which implies that teachers should attempt to fulfill these needs for optimal levels of instruction. The internalization of student motivation towards intrinsic rewards is associated with better educational interest, commitment, effort, and learning satisfaction with school (Deci & Ryan, 2017). SDT supports students' learning at their maximized ability through interest and curiosity. Deci and Ryan explained the importance of self-determined behavior attributing to academic habits creating feelings of autonomy and self-value that attributed to more learner responsibility.

Studies in SDT present important indications for encouraging student academic success by supporting intrinsic motivating factors of behavior. Students positively respond in a classroom using various teaching methods, such as experiments, group work, student choice, and knowledge of clear class expectations (Orsini et al., 2015). Students are also more motivated to learn when feeling connected to teachers and other students. Teachers' personal qualities are more successful motivating factors influencing students than teaching methods and practices (Orsini et al., 2015). These results support the value of SDT factors for successful learning with students' need for relevance, relatedness, and autonomy.

Autonomy is supported through teacher behavior exemplified in the classroom. Deci et al. (1981) assessed public elementary teachers' support for students' autonomy (Niemiec & Ryan, 2009). Students with autonomy-supportive teachers reported increased intrinsic motivation, perceived competence, and self-esteem. Ryan and Grolnick (1986) examined

students' perceptions of teachers' autonomy support. Autonomy-supportive teachers help students to experience intrinsic motivation. Regarding conceptional understanding, these studies demonstrated increased student learning when teachers instruct and interact with the class with autonomous support, satisfying the needs for autonomy and competence (Niemic & Ryan, 2009). As SDT implies, autonomy and competence are both needs leading to motivation that can be positively encouraged through a supportive class culture with a motivating teacher.

When SDT factors of motivational needs are met, they are indicators of self-determined motivation with students who are learning online. Mentoring supports student success with learning online by satisfying students' basic psychological needs (Baranik et al., 2017). Self-determination, competence, and interpersonal relatedness are indicators for success in school (Deci & Ryan, 1985). Online school success relies on teacher instruction, including the creation of an SDT-supportive classroom that fulfills student needs for motivation. All teachers should create learning environments based on SDT (Orsini et al., 2015). Proven ways to meet SDT student needs in online learning include gaining student interest, peer interaction, choice, as well as positive and constructive feedback (Kursurkar et al., 2011; Orsini et al., 2015; Salikhova et al., 2020). These instructional methods encourage the fulfillment of competence, while relatedness to be more difficult to achieve in the online classroom. Teachers can adjust their environment by encouraging students to seek their motivation by offering learning that supports autonomy, competence, and relatedness (Boudreau, 2019; Ransdell & Rieck, 2020). Teachers should consider how to fulfill motivational needs by allowing students to feel a sense of ownership and like they are in control of their success with schoolwork.

Whether instruction is in-person learning or online, intrinsic motivation is primary to humans' inherent tendencies to learn and to develop as an example of autonomous functioning

(Flavell, 1999). If the basic needs for autonomy, competence, and relatedness are supported in the online classroom, students will have the best opportunity to learn at their optimal level. While these factors indicate the potential for successful instruction, it remains questionable how teachers are to include SDT factors of motivation while teaching online. Knowing that scholars have had success looking at the use of SDT teaching adults online, it is a natural next step to apply it to the elementary online classroom.

Autonomy

Autonomy is a basic human need identified for students' self-determined behavior. It is a human experience related to motivation and learning. Students experience autonomous motivation when participating in a task because of value, sense of self, and satisfaction (Guay et al., 2017). According to SDT, autonomy allows the learner to remain intrinsically motivated when they are empowered to make choices that result in learner competency and self-determined behavior (Kusurkar et al., 2011; Niemiec & Ryan, 2009; Randell & Rieck, 2020). Self-directed activities requiring students to make decisions for their learning provide autonomy impacting student motivation. With self-direction activities, reflection is a learning practice that encourages students' confidence and motivation. Salikhova et al. (2020) confirmed that two fundamental principles for teaching online are connectedness and autonomy. Autonomy is encouraged by allowing students to participate in instructional choices actively and assessing their learning. Encouraging connectedness is accomplished with strategies for communication.

Students need to be taught with choice, relevancy, and purpose, three critical components for encouraging intrinsic motivation. Teachers must provide learning opportunities that support student choice with topics, assignments, and individual self-evaluation. Students require options for relevant, meaningful, competence-enhancing choices for motivation in learning (Evans &

Boucher, 2015; Kelleher & Whitman, 2018; Wijsman et al., 2019). Choice leads to student engagement while building relevance in their learning. As Deci and Ryan (2000a) explained, students tend to become motivated to learn and engage in activities when they feel they have control over the choice to participate. Students want to feel they have a valued opinion and are allowed to make choices. Other forms of effective engagement include students' self-evaluation. Self-evaluation further develops relevance in learning while engaging students in contemplating what they achieved and need to improve on according to their self-reflection.

Self-evaluation encourages independence, an essential trait seen as beneficial for the online learner. Boudreau (2019) described the need for "student reflection in assignments versus completion by allowing the student autonomy over their learning and self-direction gained from their evaluations instead of teacher directions" (pp. 4-5). Boudreau further suggested that teachers assign students' reflection on completed work as this method has proven to keep students engaged in the learning process. Students have some autonomy over their learning and are directed by their evaluations (Boudreau, 2019). By allowing student choice with assessment variations, teachers can meet a broader range of students' needs (Evans & Boucher, 2015). Assessment options involve students in self-evaluation, meeting the needs of all learning types to become actively involved in their learning.

In a three-year study with secondary student participants, Wijsman et al. (2019) examined the effect and impact of a learning environment on student motivation. They defined autonomy-supportive instruction as engaging students' interests and values through assignment choices, fostering relevance, and showing respect (Wijsman et al., 2019). Students who received autonomy support were more engaged and motivated in school (Reeve, 2006; Stroet et al., 2013; Wijsman et al., 2019). The researchers' consensus was that students are capable of higher-level

learning when teachers' expectations are high in combination with providing personal support and choice (Wijsman et al., 2019). A supportive and engaging online classroom offering assignment choices contributes to positive outcomes for students' motivation.

Competence

Competence is the second factor in SDT, proving that by reinforcing student ability with competence and enhancing learning opportunities, teachers nurture student motivation. While encouraging student goal setting with positivity, using words of encouragement such as "will" instead of "should" in reference to completing an assignment successfully, teachers demonstrate an assumption of competency, reinforcing success. Informing students with positive feedback builds confidence and provides them with expectations that they will succeed. SDT theory proposes that informational feedback strengthens an individual's competence, which subsequently increases their quality of performance (Deci & Ryan, 1985; Froiland & Oros, 2014; Liu, 2020). Constructive, positive feedback allows students to feel positive about their work and builds competence in their abilities and beliefs, leading to competency.

Competency is often measured according to scores on tests and final projects, so if a teacher provides constructive feedback during classes and units and not just at the end of an assignment, students are provided the means and options to accomplish the goal and be successful. If given clear directions, students are provided ways to complete a task, knowing what is expected of them before the due date. In addition to feedback and maintaining a structured class with well-known, understood expectations, students can learn to self-regulate and navigate a class successfully.

Structure encourages competence while enhancing motivation and self-regulation. Structure in the classroom refers to rules, directions, and expectations in a classroom provided by

the instructor for students to maintain. Skinner and Belmont (1993) relayed the importance of how “Structure allows students to self-regulate their behavior, remain engaged in a task, and better know how to succeed and avoid failure” (p. 225). By providing structure to lessons and assignments, students are more willing to gain confidence and success by achieving the goals established clearly by the instructor from the beginning of any class. Students need guidance and structure with assignments to encourage confidence and success, which encourages competence (Guay et al., 2017; Mansur, 2021; Skinner & Belmont, 1993; Utama, 2019).

Structure also leads students to gain confidence in their abilities while encouraging independent learning skills. The class structure encourages students to self-regulate and accomplish their goals (Sierens et al., 2009; Guay et al., 2017). A well-structured class is organized with consistent instructor communication, creating the ideal environment for reaching students’ capacity to learn. This environment needs a balance of independent learning activities while having access to teacher support for gaining competence in their learning (Garrison et al., 2000; Garrison & Baynton, 1987). While teachers offer an optimal level of challenging work with differentiated instructional strategies, students’ competence and autonomous motivation toward learning are fostered (Deci, 2009; Guay et al., 2017). By meeting all the instructional levels in a class with differentiated instruction as well as student choice in assignments, students become competent in their learning.

Relatedness

Relatedness is the third fundamental principle of SDT, and its fulfillment is correlated with teacher influence. Lopez-Garrido (2021) defined relatedness as the ability to feel both attachment and a sense of belonging amongst others. Feeling close to others and belonging to a group provides students with relatedness. Connell and Wellborn (1991) described relatedness as

students' need for a secure connection in the learning environment with support to encourage self-worth and respect. Teachers are critical components for creating respectful environments that are accepting of diverse student populations and nourishing relatedness. The more connected and respected a person feels within a group, the more trusting they are with others (Ryan et al., 2005). Students' experience with relatedness is encouraged through interacting and connecting with others, especially peers in class and with their teachers.

Relatedness is encouraged by identifying students positively for their individuality while also providing an accepting environment for all students to feel trust and belonging in a diverse classroom population. Students' satisfaction with relatedness can be expected to mediate between relatedness support and student motivation (Capon-Siebert et al., 2022). There is a connection between feeling motivated and feeling relatedness. Peer interactions contribute to students feeling relatedness by encouraging motivation to interact with others. Social opportunities are essential for increasing levels of relatedness amongst peers. The use of emoticons and chat in online platforms encourage relatedness amongst peers, but social interaction via live video and synchronous lesson instruction are higher ways to engage learners in actively experiencing relatedness. Relatedness is also impacted by collaborative learning and working together if students feel safe and accepted.

Online learning studies indicate real-time lessons are associated with motivation online (Fabriz et al., 2021; Krammer et al., 2020), as well as experiences with relatedness (Chiu, 2021). Capon-Siebert et al. (2022) indicated that interactive real-time lessons with video chat enhances students' positive experiences, motivation, and satisfaction with relatedness while learning online. Other instructional methods that encourage relatedness in the online classroom include the use of peer collaboration in breakout rooms, online class polls, chat features, emoji

expressions, and discussion boards or posts in the electronic classroom for all classmates to utilize, comment, and participate with each other.

Students learning online have needs for relatedness that can be fulfilled through teamwork, and collaborative assignments, in a trusting environment created and supported by the teacher as a learning and social facilitator. Successful learners need to feel acceptance, trust, and a sense of belonging to experience relatedness. Relatedness is an essential need for students to feel to be intrinsically motivated to learn.

Intrinsically Motivating Metacognitive Learning Strategies

Intrinsically motivating metacognitive learning strategies encourage cognitive development and SDT factors of relatedness as well as the need for autonomy and competence. Reiser et al. (2016) validated a successful impact by using metacognitive teaching strategies to lead to intrinsic motivation. Metacognitive instructional practices are proven ways of provoking active learning that motivates students. Caine and Caine (1990) explained that “Brain-based learning principles are based on the findings indicating that the brain learns from experiences with active processing and taking charge of their own learning” (p. 69). Active processing is stimulated with cognitive learning-based teaching methods. Yilmaz (2011) provided methods for active processing, such as reciprocal teaching, instructional anchors, and problem-based learning. Metacognitive strategies are brain-based learning methods that have been identified as effective instructional tools for online learning. These strategies are identified in response to research showing the need for increasing student independent learning.

While some studies exist, there are few examples of instructional strategies that are working to motivate elementary-aged students to learn in the online classroom. From the available literature showing success with online learning that are mostly related to adults,

effective instructional strategies are demonstrated with influential factors based on SDT, cognitively meeting the needs of the students, and nurturing intrinsic motivation, which is correlated to academic success. Intrinsic motivation facilitates positive academic performance while having a direct relation to student achievement (Areepattamannil, 2012; Lepper et al., 2005; Sawyer et al., 2017; Trevino & DeFreitas, 2014). Motivational strategies are important factors to identify as indicators for effective instruction since SDT theory claims that intrinsic motivation is necessary for successful learning, which leads to self-regulation.

Self-regulation is encouraged with brain-based learning principles. Brain-based learning principles incorporate a stable and familiar learning environment, meaningful, relevant class assignments, with a supportive and acceptable emotional climate (Caine & Caine, 1990). It is important for students to experience active processing and taking charge of their learning as claimed in brain-based learning (Caine & Caine, 1990). Active processing occurs during participation in questioning and reflective learning activities. The brain learns while students internalize these positive learning experiences.

Additional learning activities promoting brain development and learning are those in which students experience high interest. The more interested students are in a topic, the more positive connections were reported with the use of metacognitive strategies (McWhaw & Abrami, 2001). Teachers can support autonomous student motivation with one-on-one support, ongoing feedback, and caring interactions. Some researchers also suggest taking a humanistic approach to increase learning motivation. Humanistic approaches have similar indications for the need for a positive learning environment, students' self-motivation, teachers' facilitation, and self-evaluation (PourAli et al., 2017). Student-supportive learning environments are critical for students' achievement in online classrooms. The main indicators for making a high-quality,

impactful classroom are students' use of metacognitive strategies and intrinsic motivation (Reiser et al., 2016). These factors include a supportive teaching environment guided by high-quality teachers who allow students to use metacognitive strategies independently and collaboratively. Effective learning environments intrinsically motivate students to learn while encouraging their skills to work alone and with others.

While most suggestions for intrinsically motivational instructional strategies are based on research with adults, some studies reveal a similar positive impact on elementary students in a traditional classroom that is relevant to the online classroom. Teachers need to focus on educational psychology in early education to understand how instructional methods impact learning (Meyer, 2017). This psychological focus emphasizes learning by subject areas instead of in general, with teachers' consideration for authentic instructional techniques that encourage cognitive processing throughout the learning process (Meyer, 2017). Educational psychology has "a vital role to play in linking advances in our understanding of how learning works with advances in our understanding of how instructional methods affect learning" (Meyer, 2017, p. 840). Increased knowledge and advances in science are determining that there is a need for further examining the motivational effects of metacognitive strategies. There is a need to determine the link between patterns of brain activity and specific levels of motivation and metacognitive strategies (Meyer, 2017). Metacognitive strategies are proven to increase motivation and, therefore, should be used in all learning environments, especially online, where intrinsic motivation proves necessary for academic success.

The relationships between motivation and cognitive processing suggests that educators need to embrace brain-based learning methods for effective instruction. Sun et al. (2019) indicated that "students are more engaged in learning while experiencing positive interactions

between their emotions and cognition” (p. 3158). Positive psychological engagement occurs when one’s attitude toward class is based on trust and a supportive learning environment with positive social interactions, meaning-making, and relationship-building.

Relationship building in online learning is often built on trust, which leads to commitment and competence in learning. Trusting relationships prove valuable for student engagement (Sun et al., 2019). Students’ feelings of trust and commitment towards their learning are necessary for being successful in online environments. Students who are “conscious of and show commitment to an online relationship have higher intention to share their expertise and knowledge on an online learning platform” (Sun et al., 2019, p. 3160). Commitment and relationship building are developed on a foundation based on motivational needs in SDT.

An instructional foundation built on SDT includes students’ freedom of choice for assignments and collaborating with peers while building confidence and enhancing one’s competence and motivation, leading to the fulfillment of the highest capacity to learn. Sun et al. (2019) explained the need for students’ engagement and motivation based on SDT factors of motivation. The factor competence is gained when students have freedom of choice, with trust and positive peer relationships enhancing confidence and intrinsically motivating them with enthusiasm to engage in online learning. Students need to learn with choice while feeling supported and accepted in their individual decision making leading to competence and connectedness. Psychological engagement has a significant impact on increasing engagement by allowing students different levels of challenging activities to optimally motivate students to learn (Sun et al., 2019). SDT-based learning is useful for increasing motivation to learn at students’ optimal levels (Sun et al., 2019). It is important to identify motivational factors with proven success in studies online as well as in the traditional classroom because they are valuable

implications for impactful instruction online as well. Some of the ways to encourage intrinsic motivation based on SDT strategies include feedback, personal learning assessments, and peer collaboration, all encouraging relevancy, autonomy, and self-efficacy.

Feedback

Feedback and positive reinforcement encourage student motivation and self-regulatory behavior, such as engaging and participating in synchronous lessons and discussions and turning in independent assignments. To enhance intrinsic learner motivation, there is a strong need for teacher feedback (Conradty & Bogner, 2022; Gillies, 2009; Wijsman et al., 2019). Feedback can be given in different forms online, such as positive verbal recognitions, online chat dialogue, typed-in discussion posts, and email. For this reason, So et al. (2019) suggested using emoticons as positive feedback. Providing opportunities for peer feedback is just as impactful to the listener as well as the speaker. Activities must ensure that “listeners have as much vested interest in engaging as the speakers” (Gillies, 2008, p. 115). This form of reciprocal learning engages both the listeners and the speakers while holding each other accountable and enhancing cognition.

The timing of teachers’ responses to students as well as the quality of the feedback, is both valuable assets for motivation to learn online. Successful learning motivation is accomplished by providing students with instant quality feedback (Burdina et al., 2019; Deci & Ryan, 1985; Deci et al., 1999; Froiland & Oros, 2014; Hattie & Timperley, 2007; Lui et al., 2020; Siddiqui et al., 2020; So et al., 2019). Also important is the type of feedback students receive. Effective feedback needs to be positive and constructive, so students clearly understand what is required of their learning while increasing their capacity to self-regulate (Kusurkar et al., 2011). Instant feedback encourages motivation and self-regulation while strengthening students’ competence. SDT explains that informational feedback strengthens students’ competence while

positively impacting academic progress (Deci & Ryan, 1985; Froiland & Oros, 2014; Gillies, 2008; Liu et al., 2020). Competence is encouraged in different ways through all forms of feedback received by teachers and peers. Considering competence leads to engagement, authors suggest providing collaborative activities to encourage student interactions.

Student Engagement and Collaboration

With studies proving that collaboration influences competence and leads to engagement, successful ways to encourage collaboration in the online setting need to be identified for best practices. Cela et al. (2016) studied the influence of learning styles on social structures in the online learning environment while revealing peer collaboration as essential for comprehending course content while allowing students to ask clarifying questions. The more students interact together and ask questions, the more successful students' learning outcomes. Meaningful interactions include group assignments, discussion forums, and chat comments during asynchronous class time. The researchers gathered additional evidence indicating that the more students participated collaboratively, the more students were engaged, which ultimately resulted in higher academic outcomes (Cela et al., 2016).

Each of these components is predicated on the learning environment with a welcoming, safe, and collaborative culture that contributes to students' willingness to participate and collaborate. Students are more willing to participate with their peers when the learning environment is felt to be safe, positive, and nurturing. Du et al. (2018) reviewed extensive literature showing trust as the most influential component for provoking student relationships and teamwork in the e-learning classroom. The most successful activities allowed student choice and encouraged independence while allowing open communication with the instructor and peers. With this type of positive culture created in the e-classroom, students experience positive

feelings correlated with motivation. Positive feelings include joy, hope, and pride, which all have important effects on student achievement in educational settings (Palmer, 2017). A positive student-centered learning environment is the ideal classroom for students to reach their highest learning potential.

The Student-Centered Supportive Learning Environment

Creating a successful, intrinsically motivating learning environment requires student behavioral contributions as independent learners and collaborators, in addition to teachers needing to be capable of consistently providing a positive learning environment. The classroom culture and environment must meet the plethora of student needs and opportunities to grow and completely develop their capabilities. Thomas and Mueller (2017) shared the importance of a teacher's instructional capabilities and a positive classroom environment: "Empirical research suggests that educational outcomes depend not only on the individual student's characteristics but also on the learning environment's characteristics, for instance, the teacher's instructional practices and their classmates' perceptions" (p. 792)/

Teachers are a critical determinant for setting the tone for motivational learning in the online classroom. Thomas and Mueller's (2017) suggest that even more supportive teaching is needed for students who are highly susceptible to environmental influences impacting intrinsic motivation for learning than in the traditional classroom in unfamiliar situations, such as in an online learning classroom. Students need teachers with more motivating teaching methods for deep processing of new subjects in a new learning environment.

Knowing that studies on self-regulation stem from being intrinsically motivated, there is a need to discover best-proven practices for use in the online classroom. Liu et al. (2018) suggested for high levels of intrinsic motivation with classwork; teachers must integrate student

interest with personal value. Boudreau (2019) described “ways that teachers can adjust their environment by using four levers in class culture to help students find their motivation: autonomy, belonging, competence, and meaning” (p. 3). Teachers should “enthusiastically introduce new materials and design tasks that are of optimal or moderate difficulty; utilize incongruity, novelty, surprise, and complexity; relate to students’ interests; and are meaningful to students” (Gottfried, 2001, p. 11). Students are intrinsically motivated through meaning-making and teachers validate their identity while allowing freedom of expression and choice as well as making personal connections and meaningful experiences relevant to each learner.

Relevancy

Research-based methods for a successful motivational education imply the need for relevancy, one of the factors for motivation in SDT. To provide relevant lessons, the intended learning purpose needs to be explicitly explained to students while encouraging interest and motivation to be involved in their learning and strive to achieve the established lesson or course objectives. Palmer (2017) explained student perception related to motivation:

Positive emotions such as enjoyment, pleasure, fun, or pride can be experienced when students perceive control (perceptions of success) and value in their classroom activities.

Teachers must help students to perceive value in the content they are learning and provide students with enough support, so they experience success. (p.105)

The more success students experience with positive affirmation and understanding the meaning behind a lesson, the more motivated they are to learn.

Suggestions for ways to create a student choice-led environment are by using collaborative work and self-assessments. These methods enable students to have an idea of where they are in relation to others with their learning and understanding. In addition to these

suggestions, the use of co-created rubrics and discussion boards allows students to identify their learning gaps (Charteris et al., 2016). Choice-led collaborative classes encourage student control over their own learning and increase autonomy. Teaching can be adjusted for success for all, even in the online environment, by instructing through a lens of seeing students not just as individuals but as an entire collaborative team. Charteris et al. explained that learning can be adjusted by teaching with support for the entire class's sociocultural backgrounds with meaning-making assignments relevant to all learners, which increases their autonomy. Autonomy is a key factor for motivating students intrinsically and therefore autonomous methods of teaching and instruction must be utilized in online classrooms.

Autonomous Teaching and Instruction

Autonomous learning promotes the development of students' motivation. According to SDT, an individual's sense of autonomy is "a feeling of full volition and valued choice regarding one's activities and goals" (Deci & Ryan, 1985, p. 88). Students need learning opportunities to engage in self-directed learning with the interaction of a variety of skills and interests connected to personal interests and goals. Deci et al. (1996) further described that feelings of autonomy as allowing students to see value in learning tasks leading to engagement (Evans & Boucher, 2015). Autonomous learning evokes the motivation students need to attempt and complete assignments no matter the difficulty.

Students who are feeling autonomous in learning environments are known to allow choice and relevant driven motivational instruction. Deci and Ryan (1985) defined these motivating choices as "those that fulfill the students' need for autonomy, competence, and relatedness" (p. 88). Many teachers lack the instructional knowledge to motivate students with intrinsically supportive autonomous decision-making with relevance and meaning. In the online

learning environment, allowing choice in learning methods and assignments is highly feasible, with more options for student choice. These options are seen as endless with the resources available for online instruction and the increased ability to connect meaningfully with others across the Internet. Such tools may be well suited in a digital learning environment where the provision of choice is easier in many ways, specifically regarding personalization (Evans & Boucher, 2015). Personalized learning is possible with all the available resources and communication options online and nurtures student growth and self-efficacy.

Self-Efficacy

Several studies have revealed there is a positive relationship between self-efficacy and motivation in learning online (PourAli et al., 2017; Siddiqui et al., 2020; You et al., 2015). Bandura (1977) defined self-efficacy concerning learning as the belief in one's own ability to successfully complete tasks or behaviors, which influences one's decision, performance, and continued behaviors. Students need to know that they can learn with confidence-building and nurturing motivational methods. You et al. also noted that self-efficacy as something that is task-specific and influences one's learning capacity. Each learner has their own level of self-efficacy as well as different learning skills. Therefore, each task can influence their belief in themselves if the teacher instills confidence in them that they can accomplish anything.

Besides being task-specific, other self-efficacy studies indicate a correlation between intrinsic motivation and academic achievement. Schunk (2003) conducted a meta-review reporting a consistency in studies finding self-efficacy scores are higher with students who score higher on motivation measures (PourAli et al., 2017). Knowing motivation impacts self-efficacy, further studies were conducted to examine what influences students' perceptions and beliefs in themselves as successful learners.

Self-efficacy is highly influenced by students' perception of their teacher. The more positively motivated by teachers' behavior students feel, the higher their self-efficacy. According to You et al. (2015), students' self-efficacy correlated with increased motivation and better academics attributed to teachers' behavior. Teachers' behaviors influence students' self-belief and motivation. Teachers influence students' emotional states and persistence, which are both powerful ways of encouraging intrinsic motivation. You et al. concluded that "students' perceptions of teacher-student relationships increased over time and positively influenced students' motivation" (2015, p. 225). Students' positive self-perception is encouraged by teachers' response, depending on teachers' ability to provide an encouraging environment. Students' participation in class also increases with teacher support encouraging their individuality, validating all students' opinions and contributions to discussions and assignments.

Self-efficacy improves in schools where there was a supportive environment with encouragement from teachers. You et al. (2015) explained:

Self-efficacy can increase when students feel the teachers' respect and fairness. Students with higher self-efficacy had higher intrinsic motivation. The need for a supportive classroom climate and quality of teacher-student interpersonal relationships are associated with many student outcomes, including self-efficacy, positive affect, achievement values, enjoyment-interest in school, and engagement. (p. 236)

By providing a teacher-supportive environment with positive and respectful interactions with students, student motivation and learning abilities are increased. These same positive outcomes can be obtained with the same support offered in online schools. Relationship building is part of the factors leading to a positive climate and it is encouraged through peer collaboration led by teachers.

As previously mentioned, collaboration encourages personal connections and increases students' self-efficacy. Bandura (1986) explained that student collaboration promotes interpersonal skills and personal connections, encouraging student self-efficacy. More efficacious students are more likely to be successful in online group work (Du et al., 2018). Peer relationships have a positive impact on each other by working on assignments together while increasing self-efficacy. Du et al. explained, "the more willing students are to handle challenging tasks, the higher their self-efficacy rises, and vice versa" (2018, p. 771). Level-based abilities are challenged in group work and require students to problem-solve together. Working with peers successfully also has a positive impact on student self-efficacy. Students who trust the relationships within their group members and perceive group leaders as responsible have higher levels of online groupwork self-efficacy (Du et al., 2018). Groupwork is related to self-efficacy and encourages trust, relationships, and feelings of support.

While motivation is influenced by students' interests, goals, and beliefs, "self-efficacy alone cannot predict performance and should be accompanied by other motivational factors for robust results" (Siddiqui et al., 2020, p. 19). Other motivational factors, such as competency and relatedness, help motivate and regulate student learning. According to SDT, with proper supports and factors in place, studies indicate intrinsic motivation impacts academic achievement in online adults and children in traditional schools, so therefore implies the same possibility with elementary-aged students learning online.

Instructional Implications for Effective Online Instruction

While there is some existing research describing the instructional practices that are valuable for the success of online learning, there is a lack of research investigating elementary-level learners. Similarly, there is further evidence revealing that instruction needs to be adapted

to help develop intrinsic motivation for self-regulation skills. The development of self-regulation when it comes to schoolwork is complex. These skills require the fulfillment of needs identified in SDT to be met continuously and vary with relevancy for each student depending on their personal level of cognitive development. While scholars have examined the development of self-regulation, there is a lack of research examining these stages in the elementary-aged student learning online.

In response to past online learning-based studies and current increases in schools providing distance learning, educational researchers validate the need for the continuation of studying online learning with more studies examining students' learning experiences with the intent to educate elementary students more effectively. Ferlin (2020) indicated that questions remain for examining the long-term impact of distance learning with elementary-level students. Research measuring the effectiveness of online learning is lacking in elementary-aged students (Huett et al., 2008; Wagner, 2021). The existing research identifies severe weaknesses with needs for reexamination of curriculum and instruction. For elementary grade students, recent evaluations of online learning paint a negative perspective of online instruction (Wagner, 2021). There is a need for more studies because the existing research on the impact of motivation in the online educational setting is limited in volume and rigor (Cook & Artino, 2016). To fill this need, a more intensified study of students' real experience with motivation and learning online needs to be conducted.

There are positive possibilities for utilizing SDT-based factors in the online classroom for successful learning, as proven with adults online and younger students in traditional classrooms. While the positive impact of SDT is revealed in available research, the existing literature also indicates the need for more research to identify specifically how students of elementary age are

intrinsically motivated online. Therefore, there is a significant need for a phenomenological study with online learning and elementary students to find children's actual interpretations of these motivational factors having positive impacts on student achievement as identified by SDT.

Summary

The literature review was an examination of available research for online learning providing a theoretical framework based on previous studies examining intrinsic motivation and online learning. With research found during the literature review, former studies provided information for what has been studied, what needs to be studied, and missing gaps in online education. The missing gaps created a need for the proposed methodology in this study. Knowing the need to discover what is effectively impacting online learning with elementary students, the researcher was well-informed about the creation of a study as well as the ways to form a research design based on theories proving successful motivational strategies that work in the traditional classroom.

Few studies exist based on qualitative methods of research, so the phenomenological mixed methods approach was best for fulfilling the goals of this study. The most effective methodology, a phenomenological approach, was created to fill in the missing research needed for identifying motivational factors and effective teaching in online elementary classes. Commonly found themes throughout the research guided the researcher in developing the best methodology for studying student experiences with intrinsic motivation learning online. The most prevalent themes identified in the literature review are self-regulation, SDT, teacher influence, and students' need for self-regulation.

CHAPTER 3: METHODOLOGY

Research Design and Rationale: A Phenomenological Mixed Methods Approach

The phenomenological mixed methods design was the most appropriate choice for this research topic examining online learners experiencing intrinsic motivation in elementary school and relationships with academic performance. Phenomenological research approaches intend to “understand common experiences in order to develop practices or policies or to develop a deeper understanding about the features of a phenomenon” (Creswell & Poth, 2018, p. 79). The sequential and convergent research design combined elements from other designs and included additional data collection and analysis phases. This design was purposefully created, combining quantitative and qualitative approaches over time resembling separate research studies (DeCuir-Gunby & Schutz, 2017).

Fulmer and Frijters (2009) identified studies examining measurements for students’ motivation that indicated the need for a multidimensional approach. People experience intrinsic motivation in multiple ways requiring various measures for a good exploration of the experience. Fulmer and Frijters explained that although self-reported scales, like the survey questionnaires in this study, have standards and definitions of reliability and validity, academic motivation requires multiple measures allowing variations for students’ descriptions. The present study included measurement variations in addition to validated self-reports, including interviews, an artifact task, and emoji response options. Harter and Pike (1994) also defined self-reports on motivation as valid and reliable measures but needed additional forms for measuring motivation, such as art response choices. In addition, Fulmer and Frijters explained that self-reported measurements of achievement motivation such as academic achievement have progressed from single to multiple dimensions of motivation. The researcher created adapted self-report survey

questionnaires measuring multiple dimensions of intrinsic motivation. Considering past studies, the researcher incorporated additional measures of intrinsic motivation, including emoji responses during interviews, an art response task, open-ended questions, and interviews, explained more thoroughly in this chapter.

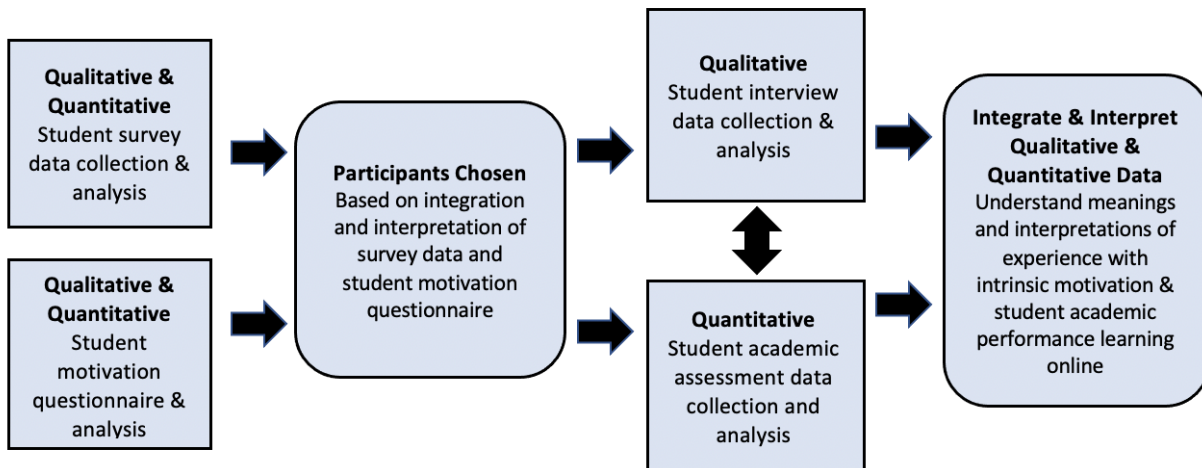
Data collection was a phenomenological mixed methods approach exploring the relationship between elementary students and intrinsic motivation learning online. Using a qualitative, descriptive approach, a researcher described individuals' subjective experiences and perceptions of a commonly shared phenomenon, such as motivation (Shedivy, 2004; Yeung, 2004). The phenomenological study was child-specific and attempted to uncover detailed, rich data from each child's experience with motivation. Intrinsic motivation is a phenomenon that theorists believe is essential for learning and developing self-regulation while motivating students to learn online successfully.

The educational environment and teachers' instructional practices influence students' academic motivation. Ryan and Stiller (1991) explained the importance for educators to consider the phenomenon of intrinsic motivation; intrinsic motivation indicates "a natural wellspring of learning and achievement that can be systematically catalyzed or undermined by parent and teacher practices" (p. 55). Educators are influential in teaching and supporting learners' motivation to succeed in school. It is important to identify instructional examples for educators to provide the most impactful education for their students. Marton (1986) explained that phenomenological studies are based on the tradition of empirical research and are "designed to answer questions about thinking and learning, especially for educational research" (p. 146). For examining the shared experience of intrinsic motivation during online learning, a phenomenological study approach was most appropriate for this educational study.

Within the phenomenological mixed methods-based framework, the researcher conducted interviews and collected questionnaire surveys from students based on factors in self-determination theory (SDT). The survey questionnaire questions were related to SDT, and individual participants' needs for autonomy, relatedness, and competence, contributing to the development of intrinsic motivation. The results gathered from two initial survey questionnaires determined the identification of a sample population experiencing intrinsic motivation. After identifying these students, the next step was interviewing them individually. Once interviews were complete, the same students' math and language arts assessments were collected and analyzed with the interview results. These data collection methods and analysis procedure details are in the forthcoming sections of this chapter.

By examining the academic performance of intrinsically motivated students to learn online, research analysis compiled detailed measurements of SDT needs with comparative academic performance rates. Intrinsic motivation is the basis for student capabilities of self-regulatory behavior, which is often associated with academic success in the traditional in-person classroom. By examining these needs and behaviors in the online classroom, the researcher explored if these needs and behaviors are just as positively correlated in the online learning environment.

As shown in Figure 2, the data collection for this study required sequential order to create the necessary phases for the valid identification of a focus group for interviews. The first data collection phase began with qualitative and quantitative data within the survey questionnaires. After survey analysis, additional convergent phases of data collection followed with interviews incorporating qualitative and quantitative instruments.

Figure 2*Mixed Methods Multi-Phase Triangulation Research Design*

To identify students who are experiencing intrinsic motivation, survey questionnaires were used with quantitative and qualitative open-ended questions. The survey questionnaire was an example of a research design tool helpful for this multi-phase intramethod study, with Likert items that represents quantitative data combined with open-ended qualitative questions (Johnson & Turner, 2003). The first of the two survey questionnaires was an adaptation of Ryan and Deci's (1985) Intrinsic Motivation Inventory (IMI), the Online Learning Intrinsic Motivation Inventory (OLIMI). The OLIMI was administered looking for indications of intrinsic motivation related to online learning. The OLIMI was assessed according to the scoring scale for the IMI. The second questionnaire was the Basic Psychological Need Satisfaction Scale (BPNS), measuring the satisfaction of the psychological needs of autonomy, competence, and relatedness defined by SDT (Deci & Ryan, 2000c; Gagne, 2003). Once these collections were finalized with complete analysis, the results identified the participants in the focus group for the next steps in

the data collection design. Following integrating and interpreting the survey questionnaires, participants were selected for a focus group to participate in interviews based on their experiences with intrinsic motivation.

Qualitative observational data collected during the interviews and the interview results with the focus group students were integrated with quantitative academic data collections from district math and English language arts assessments for a final comparison analysis. Data collections displaying students intrinsically motivated during online learning according to the survey questionnaire results combined with English language arts and math student assessment scores were analyzed and integrated into a final interpretation of the study. During each research step, security procedures were followed with data protection, privacy, and security.

Research Data Security

Preceding data collection, the researcher obtained ethical consent initially from the IRB committee. The researcher submitted the necessary data collection information and security details to the IRB committee. These details included all security measures before, during, and after conducting the research to ensure privacy and confidentiality for participants. To ensure data collection privacy, data storage security measures were followed during all stages of the research. The researcher followed best practices for managing data analysis with appropriate use and storage of all research data. Best practices included securely storing all forms of data in any media, including paper-collected artifacts and all field notes during all stages, before, during, and after analysis. The researcher used a personal password protected MacOS laptop with encrypted software called File Vault, securing all data by encrypting its contents automatically. File Vault was enabled for storing all electronic media, including surveys, questionnaires, Zoom recordings, Google docs, Word documents, SurveyMonkey data, Microsoft Excel spreadsheets, MAXQDA

software for coding, typed field notes and analysis, as well as photos of student artifacts.

Research team members had access to the data collections and followed the same security protocols for data access and storage. Each research team member had computer protection, including firewalls, virus protection, and transport-layer security standard encryption on their devices to ensure privacy and safety protection for participant data.

The research study members included the researcher and the dissertation-approved supervisor committee member. Any data transfer from one research member to another was done with encryption via the University's server, requiring an additional form of identification for use with another authentication password and code. The researcher also secured physical data materials, such as field notes or collected artifacts, in locked storage in the researcher's home.

Access to electronic data were managed via system access controls on the research team's devices. When not in use, all physical data, including laptops, field notes, or any paper versions of data collections, were stored in a securely locked cabinet in the researcher's home, where it was used and stored during all stages of research. In addition to laptop password protection, the researcher's team used active lockout functions for screen savers on their computers. Screen savers were configured to "lock out" after 20 minutes of inactivity to reduce the risk of unauthorized individuals gaining access to data if a research team member leaves their desk or forgets to log off their computer (Princeton University, 2022).

Before the commencement of data collection, all research team members had conducted verification of human subjects training via Collaborative Institutional Training Initiative (CITI) courses for "IRB Social and Behavioral Research Investigators" for the IRB to access verification (CITI Program, 2022). See Appendix A for the researcher's verification for CITI training for social and behavioral research. During the administration of survey questionnaires

and interviews, the researcher used CITI training conducted with competent and secure research measures. Interactions with students online were conducted securely, protecting all participants' personal information, and conducting interviews without interviewer bias, as addressed further in the proceeding sections on validity, reliability, and data collection.

All participants' names were kept confidential by the research team. During interview transcription and data analysis, participants' names were replaced with a code established before data collection, following initial participant consent. Consent papers were placed in protected storage via codes used for participant names in a de-identified data file secured and only accessible to the researcher. Once coding was established, the researcher destroyed the coding identification after securely transferring all data to a place only the researcher accessed.

Data storage policies for the following programs ensured that all data were secure and kept private. Electronic data collection was stored using Google docs, Microsoft Word, and Excel. All use of Google resources, including Google documents, folders, and slides, were secure in a world-class data center with built-in security blocking system storing user activity with what Google (2022) ensured is "strong industry standards and practices." Google further described that its security measures included encrypted data in transit and at rest while storing files securely.

Microsoft Word and Excel files were secured with encrypted password protection as well as maintaining updated security on all computers and devices. Diamon (2020) suggested the importance of staying current with operating system versions for personal computers because older OS versions may contain security vulnerabilities. The research team remained aware and was proactive in performing necessary updates with all electronic tools during the research period.

SurveyMonkey also adheres to security standards that protect the researcher's use and data collection of surveys and questionnaires. SurveyMonkey (2022) stated that the users' surveys, questionnaires, and data collections remain private, and users are responsible for deleting their data in their accounts while an account is active. SurveyMonkey validated their adherence to security measures, and the researcher maintained responsibility for deleting all data entries and the account upon no longer needing the data. Initial responses for volunteer requests for participants for the study from parents and students were collected via Survey Monkey through secure district email. The surveys and email responses were saved in the researcher's Google drive on a password-protected personal computer.

During recorded interviews between the researcher and participants, Zoom was also utilized with security measures to protect meetings. Zoom (2022) explained that its encryption features offer protection of meeting content by encrypting the session's video, audio, and screen sharing. The researcher was the meeting host and secured the meeting with encryption, locked the meeting, password protected the meeting and disabled participants from recording. Names were also disabled and removed by participants if they chose during the video recording. The host encrypted communication between all meeting participants by enabling the end-to-end encryption feature that uses cryptographic keys only known to each participant's devices.

For data analysis with coding, the researcher used MAXQDA software which was also encrypted and password protected. The researcher acted as the only user and administrator in the account. MAXQDA (2022) guaranteed that only user management could open the account with a valid username and password, with the same login window appearing each time the project was opened. The researcher also remained aware of any new MAXQDA updates to download, as the website recommended added security.

All previously mentioned security measures were taken to protect each participant's privacy and maintain data confidentiality throughout the research study. In addition, all data security measures established during the beginning of research were reviewed throughout the project timeframe until project completion to ensure all protection was working and secure. Once research data were no longer needed, effective data destruction methods were used. According to the projected timeline (Figure 7) for data collection and analysis, including January 2023 through March 2023, the researcher handled the data for approximately three months. After the necessary data were analyzed, electronic forms of analysis continued to be on the researcher's computer; it only existed in a de-identifiable data file until the project was complete. Paper forms of research were locked in a secure file in the researcher's home.

Three years following the completion of the project, all paper files will be shredded and disposed of completely. All electronic files, including all memory drives, computer storage, and any other form of storage on the beforementioned data collection instruments, will be permanently deleted. As regulation requires, primary data will continue to be kept securely for the next three years from the date of collection before being permanently destroyed via the previously mentioned details for secure data destruction. Additional security protocols enforced with research and all research team members are further addressed in the proceeding sections of this chapter in the validity, reliability, and ethical considerations sections.

Setting and Participants

The research was conducted with students from one public online school in a large urban school district in California. The students included first to sixth-grade children from six different classes, attending online synchronous instruction four hours a day, five days a week. The school's total enrollment was 157 students and the opportunity to participate was offered to 117

students. Thirty students responded willingly to participate with parent and student consent. All 30 respondents participated in the survey questionnaires, and five were removed from the sample size due to incomplete answers. All interactions between the researcher and participants occurred on Zoom inside the district's secure platform on each student's iPad provided by the school.

Study participants included 7 to 13-year-old elementary students with demographic variations representative of a typical classroom. The student school population included 74 males and 83 females. The student population included 2.50% African American, 5.10% Asian, 11.50% Caucasian, 60% Hawaiian/Pacific Islander, 79.00% Hispanic, and 1.30% Unknown. The student population for the research study initially stemmed from seven classes with a total of 117 students beginning with random sampling.

Sampling Procedures

Convenience sampling from the school district was used for accessibility reasons with probability and purposive sequential mixed methods techniques conducted before and during the study. This sampling provided a form of data generated both numeric and narrative, with a “focus on both depth and breadth of information across research strands” (Teddlie & Yu, 2007, p. 86). By generating qualitative and quantitative data, the mixed-methods sampling approach “involves the selection of units of analysis for a mixed-methods study through both probability and purposive sampling strategies” (Teddlie & Yu, 2007, p. 87). With the mixed methods stratified purposive sampling strategy, a small number of students was generated and divided into strata, such as levels of intrinsic motivation. Then a smaller focus group was selected within each stratum to research more intensely with one-on-one interviews. Teddlie and Yu explained that the advantages of using stratified purposive sampling include seeking and reporting details that are different or similar across different groups and examining samples within samples. The

samples within samples included 30 to 40 students selected to participate in the narrative interviews.

At the beginning of the study, to determine the sample group for interviews, a letter from the site administrator was emailed to all parents of first through sixth-grade students asking for voluntary participation. Dependent on participants' responses, survey questionnaires were then conducted with students enrolled in an online school in the same school district. Being a phenomenological study, participants from a single site are less important than seeking individuals who have experienced the phenomenon being explored (Creswell & Poth, 2018). Although student participants were from multiple grade levels, they shared the commonality of experiencing motivational learning online.

From this data collection, 30 students were chosen through purposeful sampling based on data analysis results from the initial survey questionnaires. The study used criterion purposive sampling with sample groups representing larger populations. In qualitative research, the sample size tends to be smaller due to the depth and breadth of data collection and by using a sample size as closely representative of a larger population for the study's purposes (Roberts & Hyatt, 2018). Mixed methods sampling for the student survey questionnaires utilized probability and purposive techniques to generate qualitative and quantitative data to inform the researcher of participants for the next steps in the data collection. This technique included selecting participants with probability and purposive strategies with a survey collecting qualitative and quantitative data (Teddlie & Yu, 2007).

The final sample population of 30 students provided an adequate number to accomplish the research objectives for exploring online students experiencing the phenomenon of intrinsic motivation. The initial mixed methods student intrinsic motivation survey questionnaires

provided essential data necessary to conduct the next phase in the study, collecting qualitative data from interviews.

Following the interviews, secondary student data from i-Ready English language arts and math assessments were integrated and analyzed in congruence with the interview results. In this context, Salkind (2006) explained, “Studies using both qualitative and quantitative secondary data can reinforce and clarify the findings of primary studies” (p. 872). Students’ i-Ready English language arts and math mid-year second diagnostic assessments were collected, measuring current growth. The growth measures indicated progress made from the beginning of the 2022 school year to the current midpoint of the academic year. This measure was essential to compare student growth rates to their scores on the survey questionnaires to explore relationships between intrinsic motivational levels and academic growth. Secondary data were most beneficial in this multiple-methods study for data analysis clarification. Each strand in this research study informed the next strand in a sequential, concurrent mixed methods approach.

The next phase began once the sample size of student participants was identified. The student group sample participated in the next qualitative phase of the study, including interviews and an artistic task. Once all interviews were complete, each student participant’s academic data were collected from district-mandated i-Ready ELA and math assessments. All sampling was conducted pending the Institutional Review Board (IRB) and district approval for collecting qualitative and quantitative data. Essential elements of informed consent were provided to each participant and all minor participant’s parents or guardians (Roberts & Hyatt, 2018). The study’s sampling procedures were reliable and valid ways to determine the needed sample size and collect the necessary data to answer the research questions. However, they also posed some research limitations.

Sampling Limitations

The study's sampling techniques were relevant to the study's purpose, but they did pose limiting factors. Relevant limiting factors included collecting data from participants attending one school site. Data collected from these participants represented a larger population of online elementary students. By using convenience sampling from a small population with in-depth research, the researcher gathered more descriptive detailed data within a two-month time frame. Convenience sampling provided the ability to ensure participation and create a focus group while maintaining access to the participants for further needed information as well as allowing the researcher to dive deeper into the data. This method allowed flexibility and diverse opportunities for expanding on the data and further utilizing participants for more needed data collection. Convenience sampling was more likely to produce results in a timelier manner while considering the possibility of gaining access to data.

The use of a convenience sample from the researcher's school district also provided approved access to school assessments with some vulnerable aspects to consider with secondary data. Secondary data analysis is a useful tool, but it can also have limitations. Salkind (2006) described the necessary thought required for using data collected for one purpose and using it for a different study, requiring careful planning for selecting secondary data to assure validity. Secondary data collection can be vulnerable to a loss of control since the researcher did not design the assessment or the initial collection of data. For this study, the researcher purposefully chose the district assessments with prior experience using the secondary data assessments and was fully knowledgeable about their contents and use with elementary students.

Convenience sampling also limited participation outcomes since there was a finite number of participant possibilities, to begin with, rather than using multiple district participation

sampling. There was only one online school in the district containing relevant factors for this study. In addition, the convenience collection of data from minors caused delays in conducting student sampling due to waiting for parent and student consent. Although possible limitations were considered in this study, the multiphase approach with variations in data collection with convenience sampling was most beneficial for reliability and providing a rich and deep examination of the research topic.

Instrumentation and Measures

Student motivation and academic effectiveness were measured according to the qualitative and quantitative data collected in survey questionnaires, interviews, artifacts, and i-Ready assessment results provided by the school district. Meanwhile, student survey questionnaires, artifacts, and interviews were utilized concordantly with collecting data from secondary source assessments in the district. The data were collected and analyzed using structural equation modeling.

An initial two-part survey questionnaire was administered electronically for parents and students to preview. The two parts were based on two different survey questionnaires for measuring intrinsic motivation and identifying individuals having experience with autonomy, competence, and relatedness with online learning. Surveys were modeled after those in other studies focused on motivational influences (Klaeijssen et al., 2018). The model surveys from the other studies were adjusted and adapted to the subject of primary students versus the original survey subjects being adults. The surveys were Likert-type scale surveys based on intrinsic motivation and basic psychological needs combined with open-ended questions. Both survey questionnaires in this study were modified to examine children learning online.

Each student was given the questionnaire survey to complete and sent to them

electronically, with a copy sent to their consenting parent or guardian. The survey questionnaire was adapted from Ryan and Deci's (1985) IMI, a 22-item scale measuring intrinsic motivation. An additional intrinsic motivational measurement tool was adapted to create relevant interview questions. The BPNS is a 21-item scale that measures individuals' need satisfaction in general to one's life and was adapted from another measurement tool for needs satisfaction with work (Deci & Ryan, 2000c; Gagne, 2003). This tool was created based on SDT and the concept that humans have basic universal needs as predeterminants of developing intrinsic motivation. Table 2 presents the BPNS items with an equivalent adaptation for meeting the needs of the online learning child participants.

The researcher used the IMI and BPNS after examining various instruments for measuring intrinsic motivation. Optional instruments included the Children's Academic Intrinsic Motivation Inventory (Gottfried, 1986), often used for identifying gifted and talented traits in students. Another survey was the Academic Intrinsic Motivation Survey (Archer, 1994), created for college students, and the Situational Motivation Scale (Guay et al., 2000), which is specifically activity based. Additional researched motivational measurement tools were the Motivation and Learning Strategies Inventory (Stroud & Reynolds, 2006) which was strategy based, and the Basic Psychological Need Satisfaction (BPNS; Deci & Ryan, 2000c; Gagne, 2003), measuring general satisfaction in life. The IMI also measured intrinsic motivation. Each instrument provides valid data collection, but they are suited for different situations depending on a study's purpose. For this study, the researcher identified that the IMI and the BPNS were most suitable for obtaining data indicating students experiencing intrinsic motivation.

The IMI and the BPNS both required alterations for a better understanding of the age level of elementary students and the situation for online learning. Many scales measuring

motivational factors in SDT (Reeve & Sickenius, 1994; Ryan & Connel, 1989) in education require modifications fitting to studies in the context of a classroom which must be done consistently to maintain content validity (Goldman et al., 2017). The researcher used the same questions from the original scales while adding specific references to education and online learning with each question for participant clarity and understanding. These two tools were used for determining intrinsic motivation and creating questions in a questionnaire to gather data to identify students experiencing intrinsic motivation learning online.

The first part of the survey questionnaire was based on the IMI (McAuley et al., 1989), an instrument created for measuring intrinsic human motivation based on SDT (Deci & Ryan, 1985). The IMI is a self-report measure based on SDT (Deci & Ryan, 1985) used to assess the intrinsic motivation levels of students. As a well-known multidimensional measurement device, the IMI is intended to assess participants' subjective experience of a target activity or situation. The IMI has been used in multiple studies exploring intrinsic motivation and self-regulation (Deci et al., 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan et al., 1983; Ryan et al., 1990; Ryan et al., 1991). In addition, McAuley et al. (1987) developed a factor analysis examining the IMI, with results showing strong indications proving the IMI's reliability and validity when modified for use with specific academic domains. The IMI in this study was adapted for child participants. While no children's version of the IMI existed, Williams and Gill (1995) reported findings with youth participants to have adequate internal reliability. The IMI has been used in various studies exploring intrinsic educational motivation (Filak & Sheldon, 2003; Ryan & Grolnick, 1987).

While there are different versions of the IMI with variations in several questions, Deci and Ryan (1985) offer a shortened 22-question version titled Task Evaluation Questionnaire, which is adaptable for measuring a particular task such as learning online. This study used the

22-item version in consideration of the age group of the participants with less attention span and more needed time to process questions and answers.

The IMI is a flexible tool that can be modified according to an activity or research focus without affecting the psychometric properties of the measure (Clancy et al., 2017). The IMI measures four dimensions of intrinsic motivation, including interest-enjoyment, perceived competence, perceived choice, and pressure tension. The exact four dimensions were used in the adapted version of the IMI for this study. Studies on the IMI acknowledged high levels of internal consistency for these subscale domains (McAuley et al., 1989; Seifriz et al., 1992).

The researcher adapted the original IMI questions to support this study and its participants better. See Table 1 for the original IMI questions and the adapted version created by the researcher and named Online Learning Intrinsic Motivation Inventory (OLIMI). The OLIMI was a 24-item questionnaire including four subscales: interest/enjoyment, perceived choice, perceived competence, and pressure/tension. The answer choices were a 7-point Likert-type scale chosen for the number of scales to increase their strength as measurement tools. Some researchers believe that 7 points on Likert-type scales increase reliability and validity, with a decrease found with scales using more than 7 (Johns, 2010; Miller, 1956). For each item, answer choices range from 1 (*not at all true*), 4 (*somewhat true*), to 7 (*very true*). Two open-ended qualitative questions were added for more valid measures of seeking mixed methods data. The two open-ended questions were in a separate motivation category, seeking participants experiencing motivation learning online.

Table 1

Intrinsic Motivation Survey (IMI) Adaptation to Online Learning Intrinsic Motivation Inventory (OLIMI)

IMI	OLIMI
Interest/Enjoyment	
1 While I was working on the task, I was thinking about how much I enjoyed it.	1 While working online I was thinking about how much I enjoyed it.
5 I found the task very interesting.	5 I find online learning very interesting.
8 Doing the task was fun.	8 Learning online is fun.
10 I enjoyed doing the task very much.	10 I enjoy learning online very much.
14 I thought the task was very boring.	14 I think learning online is very boring.
17 I thought the task was very interesting.	17 I think learning online is very interesting.
20 I would describe the task as very enjoyable.	20 I would describe learning online as very enjoyable.
Perceived Competence	
4 I think I am pretty good at this task.	4 I think I am pretty good at learning online.
7 I think I did pretty well at this activity compared to other students.	7 I think I do pretty well at learning online, compared to other students.
12 I am satisfied with my performance with this task.	12 I am satisfied with my performance with learning online.
16 I felt pretty skilled at this task.	16 I feel pretty skilled at learning online.
22 After working at this task for a while, I felt pretty competent.	22 After learning online for a while, I feel pretty competent.
Perceived Choice	
3 I felt that it was my choice to do the task.	3 I feel that it is my choice to learn online.
11 I did not really have a choice about doing the task.	11 I did not really have a choice about learning online.
15 I felt like I was doing what I wanted to do while I was working on the task.	15 I feel like I am doing what I want to do while I am learning online.

19 I felt like I had to do the task.	19 I feel like I have to learn online.
21 I did the task because I had no choice.	21 I learn online because I have no choice.
Pressure/Tension	
2 I did not feel at all nervous about doing the task.	2 I do not feel at all nervous about learning online.
6 I felt tense while doing the task.	6 I feel tense while learning online.
9 I felt relaxed while doing the task.	9 I feel relaxed while learning online.
13 I was anxious while doing the task.	13 I feel anxious while learning online.
18 I felt pressured while doing the task.	18 I feel pressure while working online.
Open Ended Questions	
23 What motivates you to do your schoolwork learning online?	
24 What do you like most about learning online?	

Note. To measure the students' sense of intrinsic motivation in learning online, this study adapted the first 22 items from the IMI created by Deci and Ryan (1985).

Online Learning Intrinsic Motivation Inventory

The first survey questionnaire included questions based on the questions in the IMI with alterations specifying the topic of inquiry as online learning. To alter the original IMI and maintain the same validity and usefulness, the researcher made modifications to remain consistent with the study's purpose of identifying intrinsic motivation in children in the online learning setting as the focus in question throughout the questionnaire—multiple versions of the IMI ranging from 22 items to 45 items. The 25-item version takes approximately 10 minutes to complete. It has been used to measure students' subjective motivation scores (Olivares et al., 2020). The reported time for administering shorter versions of the survey influenced the researcher's decision to choose the 22-item version considering the need for shorter times with child participants having shorter attention spans than adults.

Basic Psychological Needs Satisfaction

An additional part of the survey questionnaire included the Basic Psychological Needs Satisfaction (BPNS) measurement for intrinsic motivation based on personal needs satisfied by SDT factors for intrinsic motivation. Studies on elementary students found a direct and indirect relationship between the satisfaction of students' psychological needs and class achievement (Wang et al., 2019). Elementary students' satisfaction with basic needs was better understood with a modified version measuring their needs specifically while learning online. The BPNS is a 21-item scale measuring need satisfaction generally in one's life. The BPNS has been used in several general contexts to measure intrinsic motivation (Gagne, 2003; Niemiec & Ryan, 2009; Thøgersen-Ntoumzani & Ntoumanis, 2007).

The BPNS was created to be modified for a study's unique situational factors. Johnston and Finney (2010) demonstrated a modified, valid three-factor solution for the scale. The scale allows a reliable measure of the motivational effects of school-based instructional programs promoting the psychological needs for autonomy, competence, and relatedness (Alivernini et al., 2016; Girelli et al., 2016; Girelli et al., 2019; Gunnel et al., 2013). The scale for this study was modified using the same psychological needs as in the BPNS but adapted for the situation of learning online.

Several studies adapting the BPNS to specific situations include measurements of motivation in work, sports, and education. Many educational-specific studies have used the BPNS or an adaptation of its original scale (Aelterman et al., 2018; Cardella et al., 2020; Chen et al., 2019; Conesa & Dunabeitia, 2021; Haerens et al., 2015; Macakova & Wood, 2020; Wang et al., 2019). Researchers suggested the need for adaptations concerning the specificity of the psychological needs in specific environments, such as the necessary changes for this study to an

online learning environment. Conesa and Dunabeitia explicated the relevance of using a valid tool adapted for school contexts considering children's basic psychological needs. Adaptations made in the BPNS for this study were purposeful for the study's objective and made relatable for elementary-age students.

The adapted version of the BPNS created for this study measured need satisfaction generally with children learning online synchronously. As seen in Table 2, the BPNS questions were modified to explore SDT factors of psychological needs for children's needs learning online in a new version of the scale titled Basic Psychological Needs Satisfaction in Online Learning (BPNS-OL). The scale had 21 items with three subscales: autonomy, competence, and relatedness. Two open-ended questions were added to ensure validity with additional qualitative measures. The entire survey questionnaire contained 23 items. Students were asked to think about how each question related to them while learning online and to indicate how true it was for them. The seven-choice Likert-type scale responses ranged from 1 (*not at all true*), 4 (*somewhat true*), to 7 (*very true*). Two additional open-ended questions were added for additional qualitative data. Once the data were gathered from both survey questionnaires and students were identified who showed evidence of intrinsic motivation according to the survey questionnaire results, participants for the interviews were identified.

As seen in Table 2, the second part of the survey questionnaire was given at the same time as the first survey questionnaire to all willing and approved students in grades first through sixth. The survey questionnaires were both modified versions of the original questionnaires. The modifications were necessary for adapting them to the elementary age group participants.

Table 2*Basic Psychological Need Satisfaction Scale (BPNS) Adaptation to Online Learning Needs**Satisfaction and Intrinsic Motivation Interview Questions*

BPNS	BPNS-OL
Autonomy	
1 I feel like I am free to decide for myself how to live my life.	1 I feel like I am free to decide for myself how to learn in school.
4 I feel pressured in my life.	4 I feel pressured learning online.
8 I generally feel free to express my ideas and opinions.	8 I generally feel free to express my ideas and opinions in class.
11 In my daily life, I frequently have to do what I am told.	11 In my daily classes, I frequently have to do what I am told.
14 People I interact with on a daily basis tend to take my feelings into consideration.	14 People in class I interact with on a daily basis tend to take my feelings into consideration.
17 I feel like I can pretty much be myself in my daily situations.	17 I feel like I can pretty much be myself in my daily classes.
20 There is not much opportunity for me to decide for myself how to do things in my daily life.	20 There is not much opportunity for me to decide for myself how to do things in my daily classes.
Competence	
3 Often, I do not feel very competent.	3 Often, I do not feel very skilled in class.
5 People I know tell me I am good at what I do.	5 People I know tell me I am good at learning online.
10 I have been able to learn interesting new skills recently.	10 I have been able to learn interesting new skills recently.
13 Most days I feel a sense of accomplishment from what I do.	13 Most days I feel a sense of accomplishment from learning online.
15 In my life I do not get much of a chance to show how capable I am.	15 In class, I do not get much of a chance to show how capable I am.
19 I often do not feel very capable.	19 I often do not feel very capable in class.

Relatedness

2 I really like the people I interact with
class.

2 I really like the people I interact with in
class.

6 I get along with people I come in contact
with.

6 I get along with people I come in contact
with in my class.

7 I pretty much keep to myself and don't have
a lot of social contacts.

7 I pretty much keep to myself and don't have
a lot of social contacts.

9 I consider the people I regularly interact with
to be my friends.

9 I consider the people I regularly interact with
in class to be my friends.

12 People in my life care about me.

12 People in my class care about me.

16 There are not many people that I am close to.

16 There are not many people that I am close
to in class.

18 The people I interact with regularly do not
seem to like me much.

18 The people I interact with regularly in class
do not seem to like me much.

21 People are generally pretty friendly towards
me.

21 People are generally pretty friendly towards
me in class.

Open Ended Questions

22 Why do you complete assignments for your online class?

23 What makes you feel successful learning in your online class?

Note. BPNS-OL questions are adapted from the original BPNS scale (Deci & Ryan, 2000c; Gagne, 2003).

To ensure students understood the survey questionnaire directions and questions, the researcher met with the students in groups of three to five through Zoom to assist and ensure validity in data collection so all students were provided with the same understanding of the questions. The researcher read the directions and questions with answer choices as the students filled in their answers electronically on the shared SurveyMonkey survey questionnaire.

Interviews

Semi-structured interviews were conducted with 25 child participants, each interviewed

by the researcher. Interviews took place online on Zoom while the researcher was at the school site and the students were in their homes. The researcher asked about students' experience with intrinsic motivation while learning online. The questions were directly linked to motivational factors established in SDT while asking students to describe their experience with autonomy, competence, and relatedness. The questions were alterations of the questions used in the survey questionnaires.

Questions were adaptations from the interest and enjoyment subscale of the IMI, which are indications of intrinsic motivation. According to the Center for Determination Theory (2022), the interest and enjoyment subscale can be used as a self-report for measuring intrinsic motivation. The questionnaires for the interview were all open-ended questions intended for hearing students' perceptions and a deeper understanding of their experiences with motivation to learn online. It is necessary to change measurement tools for better adaptation for child participants. The interview questions were based on BPNS and SDT factors of intrinsic motivation, which included open-ended questions for students to describe their perception and experience with intrinsic motivation based on SDT and perception of the concept of intrinsic motivation.

The semi-structured interview questions were created to explore the intrinsic motivation for learning online with the freedom for the interviewer to tailor in-depth responses from children describing their experiences with learning online. While there are many forms of interview questioning in qualitative research, less structured interviews are primarily used in phenomenological studies (Brinkmann & Kvale, 2014; Ellis, 2016). Semi-structured interviews provide organized questions for reference to maintaining the interview process while using open-ended questions, allowing the participants to respond openly with their answers. Less

structured interviews allow flexibility for individuals to respond more naturally with the possibility of exploring an issue in greater depth for a richer response as the interview progresses (Brinkman & Kvale, 2014; Ellis, 2016). Table 3 presents the interview questions used in this study for exploring student experiences with intrinsic motivation and online learning. Interview questions were an adapted self-created compilation the researcher formulated based on several academic motivational themes found throughout research on intrinsic motivation and children (Montesino, 1998).

Table 3

Interview Questions for Exploring Student Experiences with Intrinsic Motivation Learning Online

Interview Questions
1 What do you enjoy most about learning online?
2 Describe the best day you ever had learning online.
3 How do you feel about your teacher?
4 How do you feel about your classmates?
5 What are your strengths as a student?
6 What does your teacher do that makes you try your best?
7 What motivates you to do your schoolwork in class and after school?
8 What makes you the happiest about learning online?
9 Do you like to work in class in a breakout room alone or with someone?
10 What is your favorite lesson or activity in class?
11 Do you ever get to choose which activities to do or is it always the teacher's choice?
12 Do you like what you are learning in class?
13 Who do you turn to for help when you have questions in class?

14 How do you know when you are successfully learning in class?

15 If you could grade yourself as a student, what grade would you give yourself?

Note. Questions are adapted from the IMI created by Deci and Ryan (1985).

In addition, during the interview, students could use the face reaction tool with emoji responses in the Zoom meeting. The Zoom reaction tool was an active learning tool for students to provide non-verbal feedback to a question posed by the meeting host (Zoom, 2022). Nonverbal response options provided participants with additional communication methods, aiding participant comfort. Experts examining better ways to conduct research with children validated that younger participants sometimes need non-verbal ways to communicate in addition to writing or drawing. Children are visual learners; most are familiar with visual media and emoticons such as emoji responses. By combining creative response tools during interviews, the children can use art as a language to make meaning of the phenomenon in question (Riley, 2001). Considering time and data collection consistency, only 12 specific emojis were available for participant use. Before questioning students, the interviewer held up a chart listing the 12 emojis with pictures and meanings. By allowing the students to use the emoji face reaction tool, they were could respond to questions by clicking the react face icon displaying 12 emoji faces and two thumbs. The researcher informed the students of the emoji response options explaining how to click the React face icon in Zoom.

The researcher enabled zoom reactions during the interviews. Additional reactions the researcher enabled during Zoom meetings and interviews included allowing meeting participants to place an icon in their video panel and beside their name in the participant's panel to communicate with the interviewer without speaking. For example, selecting the slow-down icon placed in the student's video panel beside their name indicated they wanted the interviewer to slow down (Zoom, 2022). In addition, the host could upload a summary of how many

participants were displayed on each icon throughout the interview on Zoom (Zoom, 2022). This icon summary aided in the quantitative data collection of emoji responses during each interview.

The meanings of each emoji were provided to each participant. Emojipedia offers universal meanings of the Zoom Apple-based emojis. These meanings are shown in Figure 3 and were explained and shown during the interview for clarity. The emoji are official names from Unicode Standard (Emojipedia, 2022). See Figure 3 for the 12 Zoom reactions and their intended meanings listed in the same format as they were provided for participants during the interview. The collection of Zoom reactions added to this study's measures for data.

Figure 3

Emoji Zoom Reactions and Their Meanings

Reaction: 😊 Smileys & Thumbs	Meaning
😊 Smiling Face with Smiling Eyes	Genuine happiness or positive feelings
😐 Neutral Face	Neutral sentiment, mild irritation, or concern.
😍 Smiling Face with Hearts	Feelings of love
😂 Face with Tears of Joy	Funny or pleasing
😓 Pleading Face	Upset or worried
😞 Frowning Face	Disappointment or sadness
😬 Face with Diagonal Mouth	Confusion
🥳 Partying Face	Enjoying good times
😡 Angry Face	Anger or irritation
😭 Crying Face	Sadness or pain
👍 Thumbs Up	Good, like, yes, or thumbs up
👎 Thumbs Down	Bad, dislike, no, or thumbs down

Note. All Zoom emojis are Apple based and meanings are derived from Emojipedia (2022).

The interview also included an additional art task response called Color Symbol Image (CSI). The task was an instructional strategy from a collaboration of instructional thinking

routines created for students to use cognitive processing while expressing their thinking through visual representations (Ritchhart et al., 2011). While thinking is invisible to others and happens in students' minds, influential thinkers communicate their thoughts verbally, written, or drawing their ideas through speaking, writing, or drawing while deepening their cognition (Ritchhart & Perkins, 2008). More modern approaches to improve methodological research with children identify the need for empowering children in the participatory research process by seeing them as collaborators in the research process rather than objects of study (Berson et al., 2019). By offering students multiple ways to participate in the interview with drawings, the researcher gave students choices while respecting their individuality and capability to choose.

Methods such as drawing are utilized to help children feel more comfortable with the data collection process. Punch (2002) reminded researchers not just to choose art methods based on the assumption that it is more enjoyable for children but because these methods can provide meaningful data. In addition, creative mediums such as art writing and drawing activities entail "inventive and imaginative processes," allowing students additional means for answering questions and guiding interview discussions (Veal, 2005, p. 245). The art task for this study incorporated drawing and writing as options for participants to respond to in the interview.

The CSI routine is a creative language arts instructional strategy for open-ended qualitative data allowing participants to answer with responses by drawing a picture, writing words, or writing sentences. Students could make their connections and think metaphorically. Artistic methods often assist children with expressing and structuring their thoughts. Offering alternative instruments was valuable for collecting data from children and made answering questions more participant-friendly while allowing choices for responding.

Students could respond on the previously sent electronic CSI art template or via paper.

See Figure 4 for an image of the CSI template students received. The CSI routine asks learners to represent an idea or topic in non-verbal ways using a color, symbol, and image. Prior to interviews, participating students received instructions through the school's email messaging system to pick up these materials at school, including a paper version of the interview questions, CSI template, and emoji example page with meanings (resembling Figure 3) crayons, markers, and colored pencils. These supplies were called the interview bag. The online school had weekly distribution times for parents to pick up supplies regularly which was when the interview bags were available before the interview dates.

Figure 4

Making Thinking Visible, CSI Thinking Routine Template for Student Artifact Task

Topic: Learning Online		
Color 	Symbol 	Image 
Why did you choose this color ?	Why did you choose this symbol ?	Why did you choose this image ?

Note. Adapted from *Making Thinking Visible* (Ritchhart et al., 2011). Students created a color, symbol, and image representing how they feel about learning online.

i-Ready Assessments

After completing all interviews, the researcher collected the most recent scores from each participant's i-Ready math and language arts midyear diagnostic assessments. i-Ready is an online learning program for reading and math that monitors students' progress throughout the school year. The i-Ready assessments demonstrated students' current instructional grade level placement and growth measures in math and language arts according to research-based grade level norms. The i-Ready program provides normative and criterion-referenced data correlating with state and national assessments (Curriculum Associates, 2022). i-Ready growth measurements served as indicators of each student's current level of growth in comparison to the start of the current school year in math and language arts. The researcher considered current growth levels over diagnostic grade level placement scores for the most accurate indicators of academic performance rates. These scores assisted in the data analysis to indicate academic performance levels with students experiencing intrinsic motivation while learning online.

Reliability

To determine reliability, the researcher included multiple forms of collecting data to evaluate the experience of intrinsic motivation while learning online. The researcher looked for correlations between response results from the OLIMI and the BPNS-OL. Using multiple methods increases the opportunity to compare data for cross-analysis while increasing reliability (Jarvenoja & Jarvela, 2005; Perry et al., 2002). The study included six forms of data collection, as previously explained in this chapter. These data collections were products of a narrow and clear focus for obtaining reliable research goals with realistic obtainment.

For the realistic obtainment of participants and data collection, the researcher included participants from their school of employment. The research and data collection were approved by

well-known gatekeepers in the district, approving all data collection described. The study design was indubitably created with careful planning and forethought for the relevancy of data and reliability for completing the research design. The researcher had access to the participants using a sampling technique that represented the larger population. The selection process included mixed ability groups in a sample of students who represented a realistic classroom. The data represented the larger population of online learners in a typical online elementary classroom. These considerations provided the researcher with reliable data relevant to a broader population of online learners allowing generalizability in the final data analysis.

The researcher had also obtained permission in advance to access participants during the projected research time and through the remainder of the 2023 school year if needed. The district's Director of Human Resources and the school site administrator provided permission following a meeting to review all data collection instruments and research methods. Study permission was granted because the district's name would not be identified in the study. The researcher quickly confirmed reliable timeframes and options for when to meet with participants since permission was granted by the district for administrative access and use of all student and parent contact information as well as access to the secondary data, including i-Ready assessments that were analyzed in this study. The researcher had previous training and experience analyzing i-Ready data regularly for the past two years. This experience added to the reliability of data access and the ability to analyze the data accurately.

Validity

Methods of validity had been considered in the planning and creation of the research design and continued to be utilized during analysis and final study interpretations. The study was conducted through bracketing, intuiting, simple descriptive design measures, and final reported

interpretations. While using mixed methods instruments and interpretative validity, the researcher provided direct and descriptive data results contributing to a credible study.

Credibility was created, providing the researcher's background with experience with the content of the study, as indicated in Chapter 1. Although bias was exposed by disclosing the researcher's educational background, this information was expanded to include relevance for the study while providing competency for the researcher. Knowing the researcher had extensive experience and training in educational teaching techniques, curriculum, instruction, and leadership provided the study with further credence and reliability. The researcher's relevant background, expertise, and purpose for the study all contributed to the study's credibility. While having experience in the study environment, the researcher took all steps necessary to collect data unbiasedly and make interpretations based on the participant's experience.

The researcher prevented their perceptions from affecting the study, thus jeopardizing the validity of the research. Thomson (2011) explained that a critical factor for valid interpretations is providing an analysis based solely on participant perception and not that of the researcher. "The key here is that the interpretations are not based on the researcher's perspective but that of the participant" (Thomson, 2011, p. 79). The researcher abided by bracketing throughout the study. Bracketing required the researcher to refrain from associating their beliefs about the study's phenomenon or previous knowledge about the participants throughout the phenomenological investigation (Carpenter, 2007). The phenomenological study required the researcher to remain open-minded throughout the study to truly capture the research purpose for exploring students' experience with motivation learning online. Pessi (2004) explained that generalized interpretations of data may hinder phenomenological data analysis and limit results if not bracketed. Qualitative data is susceptible to researcher-biased interpretations and not

accurately presenting the child's data if not bracketed. Chan et al. (2013) advised that while it is ultimately up to the researcher to decide how much personal influence they allow, there is a need for innovative ways to conduct qualitative research concerning validity in phenomenology. The researcher committed to bracketing and adhering to the research expert's advice.

The researcher conducted interviews and all data collection by structuring a bracketed approach while allowing children to provide responses not influenced by the interviewee. Caelli (2001) recommended that researchers openly validate from the beginning of all interviews that all individuals have unique experiences unknown to the interviewer. The researcher addressed any assumptions they had with participants at the beginning of data collection and interviews while bracketing for the duration of the data collection for a better understanding of the participant's responses. In addition, the researcher kept a reflexive notebook, noting when personal bias was evident on the part of the researcher and the participant.

A supportive and safe interviewing environment allowed participants the freedom to report their own experiences, which is imperative to the validity and accuracy of the study. Gaining the unique descriptive experience of the participants was one of the primary purposes of the study. The researcher remained aware and open to unanticipated information participants revealed, intuiting through all participant interactions and data collection. Intuiting guided the researcher in a reliable, valid interpretation and detailed analysis of accurate participants' experiences with intrinsic motivation. Through this emergent design, each interview was conducted with an open mind recording detailed data reports adding to the richness of result details.

Concepts of validity in qualitative research must be considered, understood, and demonstrated descriptively in research proposals explaining methods and strategies for avoiding

research weaknesses impacting validity. The research design was created with instruments and procedures planned for a valid study. Participants' perceptions and viewpoints were accurately reported in rich and honest detail. As Thomson (2011) explained, while there are different ways to gain the truth in research, all valid studies "insist on accurate and meaningful findings that must pass measures of validity" (p. 81). Measures included statistical analysis, research committee input, data review, and mixed methods for data collection. Valid research begins with ensuring these measures and precautions are taken prior to research, during, and after data collection. Maxwell (2013) expounded on the importance of making validity a key component in research design. During the design phase, the researcher considered measures of validity needed to create the proposed reliable research. They were making validity an explicit component of design that can guide the researcher to address validity threats (Maxwell, 2013).

During the research design, survey questions were reviewed in October with second graders ages seven and eight to ensure this age group understood directions, questions, words, and vocabulary. Students comprehended the questions except for some needing an explanation for "competent," which needed clarification. The researcher clarified the word "skilled" and "good at" provided by the researcher in question 26 of the OLIMI. The researcher kept the original word "competent" while adding the words for clarification to maintain accuracy with the original questionnaire, which was also done in the study.

Data collection was conducted ethically, using adequate and reliable strategies with a credible analysis. Upon concluding the data analysis, the researcher looked for any alternative conclusions or questions left unanswered by the data presented and included these points. As suggested by Creswell and Poth (2018), the researcher must identify any alternative conclusions other than those offered by the data results that the researcher could have derived. Evidence is

the greatest safeguard against validity threats. Methods allow the researcher to gain evidence, but the importance is obtaining the evidence ethically, clearly, and adequately while clearly explaining the “relationship of your conclusions with reality” (Maxwell, 2013, p. 121).

Accuracy in the written descriptive interpretation of the study’s results is essential. Descriptive validity was one category Maxwell (2013) described used to judge the validity of qualitative research (Thomson, 2011). Thomson explained that “Descriptive validity forms the base upon which all other forms of validity are built” (2011, p. 78). More specific to a phenomenological study, a researcher must provide a descriptive and accurate analysis of data with accurate descriptions of researcher bias void of personal perception and rich in valid honest detail of the actual situation, population, and experience of the data collection. The researcher used rich data during the data description, explanation, and interpretation stage. Maxwell (2013) suggested rich data will be collected with intensive interviews providing detailed variations of data realistically and accurately, not just notations on what the researcher found exciting or significant.

Through all stages of the study, the researcher looked for all possible unknown results, evaluating the data keenly and honestly. The researcher made sure to “provide better research and methods that answer the ‘what ifs’” in precaution for questions posed by other researchers (Thomson, 2011, p. 80). A thorough plan with accurate follow-through and viewing all steps through a researcher, reader, and evaluator’s lens enabled the researcher to complete the study with evaluative validity. Using ethical protocols enabled a thoroughly valid study.

Validity was also ensured with the triangulation of mixed-methods data collection. By using multiple methods for data collection, such as survey questionnaires, interviews, picture artifacts, and field notes, the researcher increases validity. Validity in qualitative research was

defined by Creswell and Poth (2018) as the credibility of a description, conclusion, explanation, interpretation, or other sorts of account. Two threats to research credibility that are important to consider during all research steps include inadequate sampling and reactivity. Inadequate sampling has the potential to compromise the validity of a study and “Diversity is often underestimated in qualitative research” (Maxwell, 2013, p. 137). The researcher included more participants than the minimum of six to 20 individuals recommended for phenomenological research to ensure diversity and a valid number of students to make the study a reliable measure of a diverse population (Ellis, 2016).

The researcher planned to include 117 student participants for the initial stage of criterion selection, reduced to 30 to 40 participants for final interviews. Within this sample population, the researcher used multiple class populations for participants. This strategy ensured the ability to collect data from a diverse population. The results were then reported in a detailed descriptive account accurately describing a diverse population experiencing motivation in online learning, not just a few selective students. A researcher must “adequately understand the variation in the phenomenon of interest in the setting or group of people studied” (Maxwell, 2013, p. 137). To collect adequate data and interpret it credibly, the researcher took thorough descriptive notes while paying attention to all details during the data collection. These details included each participant’s information, environment, timing, and all conditions impacting the study. Taking these details into account while interpreting the data were just as important as including accurate positive or negative results.

The researcher ensured that the generalized structural study details and descriptions were clear, consistent, and accurately represented the entire study. The researcher also allowed connections to be made directly to the detailed specifics in the data collection. It is imperative to

the validity of a study to provide a descriptive analysis of participants. The researcher provided additional validity by considering the following questions with answers in the interpretation and analysis phase; “Is the structural description situation-specific or does it hold in general for the experience on other situations?” (Creswell & Poth, 2018, p. 272). The study was structurally specific to online learning but also generalizable for online learners in larger elementary grade-level populations.

The researcher considered the additional validity threat susceptible in qualitative studies, which “influence the researcher on the setting or individuals studied, generally known as reactivity” (Maxwell, 2013, p. 124). The researcher was aware of personal influence and reactivity. Maxwell defined *reactivity* as “the influence of the researcher on the setting or individuals studied” (2013, p. 124). Maxwell suggested not eliminating researcher influence because that is nearly impossible but using it productively as an advantage to the research: “Explaining your possible biases and how you will deal with these is a key task of your research proposal” (2013, p. 124). While clearly stating researcher bias and influence in Chapter 1, the researcher ensured the use of open-ended scripts minimizing evidence of bias and utilizing a research team for feedback. The researcher made it a point to acknowledge potential influences while collecting and analyzing data, providing written evidence of researcher influence.

The researcher personally conducted each online interview for safety measures and to ensure a secure participant environment during student data collection. Parents and student participants may have previously known the researcher’s name, school position, and background. This information was provided to all students and participants and validated by the school administrator via electronic mail sent to all participants and parents. The interviewer conducted ethical codes of conduct necessary for valid data collection, as previously described earlier

within this chapter. Consistency was used in all data collections. The interviewer conducted each interview the same way and did not expand on questions or answers which might influence the interviewee's responses. The interviewer read the questions clearly without adding unique ideas, comments, or perceptions that could impact the interviewee's thinking, behavior, or responses.

The researcher was an educator employed at the research location with an updated fingerprint record on file and currently known as an upstanding employee in the school district. Validated background checks and evidence of prior successful work experience with children in elementary school supported the researcher with reliability and consistency. The researcher's professional background ensured that interviews were conducted and recorded with participants in the study without threatening the study's validity and providing safety and ethics measures.

The researcher consistently ensured necessary precautions throughout the study with appropriate and relevant evidence of validation and evaluative strategies. Validity in "qualitative research is not the result of indifference, but of integrity" (Maxwell, 2013, p. 124). By acknowledging all validity threats and utilizing clear strategies for creating well-planned reliable study methods, the researcher increased credibility while reinforcing the research validity. Promising strategies included multiple forms of measurement of motivation used in the study for increased interpretative accuracy by validating and supplementing data from a self-report (Veermans & Tapola, 2004). The data collection included diverse ways of collecting data by incorporating creative and engaging research tools. Semi-structured interviews and open-ended questions support data triangulation and manage power imbalances between the researcher and child (Carrington et al., 2007; Darbyshire et al., 2005; Freeman & Mathison, 2009; Moss et al., 2007; Punch, 2002). The creative tools encouraged mixed data measurements supporting a more comfortable interview environment for students. By providing an interview atmosphere in which

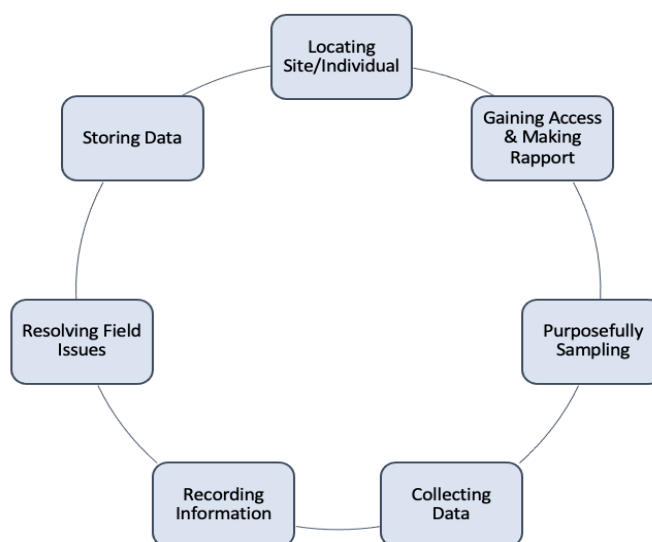
students were familiar with their school environment and having the interviewer be familiar, the researcher built rapport with students before the interviews. In addition, participants were offered the most secure and safe way to participate. This purposeful and ethical data collection plan provided participants the right to be treated with respect as valued research team members.

Data Collection

Once IRB approval was obtained, the researcher began the data collection process, as illustrated by Creswell and Poth (2018) in the suggested activities labeled “The Data Collection Circle” (p. 148). Creswell and Poth’s suggested activities for data collection begin with locating the collection site and participants and end with storing data (Figure 5). Following this circle as a model, it served as an important list of collection details. The researcher began with planning and referring to the collection process as a reminder for reliability, validity, and ethical purposes. The researcher referred to the Data Collection Circle as a guide for assurance of thorough planning and data collection details.

Figure 5

“The Data Collection Circle” (Creswell & Poth, 2018)



First, the researcher obtained written consent from all participating parties to conduct the study. These participants included the school district, the school site administrator, participating parents, and students. Confidentiality was communicated as maintained to the degree permitted by the technology used, as well as notification that adult and student participation was voluntary. After receiving approval from the school district, school, and the IRB committee, the researcher conducted a survey request for voluntary participation in the study via SurveyMonkey on the district school email. Participating parents included those with children in grades first through sixth grade. These parents were contacted and given the option to voluntarily allow their child to participate in the study with their child's willingness and approval. This contact was in an email sent to their listed school contacts with full disclosure and complete details defining the purpose of the study and data collection details. In addition to the data information, an incentive was offered to explain that interview participants would receive a free school logo t-shirt. After identifying the participants, the researcher contacted parents for written consent from them as well as from their children. Once parents and children's written consent was received, the researcher emailed parents with options for dates and times to schedule the online survey questionnaires with two weeks of advanced notice before the first meeting dates.

The researcher administered the initial data collection survey questionnaires in groups of five children online through Zoom. The interviewer was sure to give directions and ask questions the same way as all participants. By following ethical codes of conduct, the questionnaires were administered following a script, the same with all students, to ensure accuracy and reliability with valid results. In addition, the interviewer had instructions with the allowance to read questionnaire items aloud to ensure all students, including those with reading or learning difficulties, were able to comprehend all questions equally. Karabenick et al. (2007) explained

challenges with students' cognitive processing of some self-report terminology. Following recommendations from Elliot (2004), the researcher attempted to avoid administration problems due to students completing the surveys without assistance for clarification and ensuring understanding. The interviewer administered the survey questionnaire to all participating students on Zoom. Survey questionnaires were uploaded to the researcher's personal computer while following security measures stated earlier in this chapter.

The data were collected and analyzed using structural equation modeling. Survey questionnaires with a self-report type motivational scale, as well as open-ended questions in semi-structured interviews, were used similarly to other research studies on motivation and online learning (Mese & Sevilen, 2021). The research took place over two months via online communication through email and interviews on Zoom. Student surveys, questionnaires, artifacts, and interviews were utilized in concordance with collecting data from secondary sources in the district. Secondary sources included student i-Ready English language arts and math assessments.

Student motivation and academic effectiveness were measured according to the qualitative and quantitative data collected in the survey questionnaires and interviews, as well as i-Ready mathematics and language arts assessment data and results from the emoji responses and artifacts. The survey models from the other studies were adjusted and adapted to the subject of primary students versus the original survey subjects being adults. The surveys were Likert-type scale online surveys based on intrinsic motivation and basic psychological needs and were combined with open-ended questions.

The OLIMI and the BPNS-OL survey questionnaires were administered to children during school hours and facilitated by the researcher on Zoom. The researcher read aloud all

survey questionnaire items to the students. After analyzing the survey questionnaires' data, the research population was narrowed down to a group of 25 children in grades first through sixth from one school. This group of children made up the focus group for students participating in interviews.

During the semi-structured interviews, the students were given the CSI artifact exercise following the ending of the interview questions. The artifacts were the final portion of the interview, and directions were read by the interview facilitator. Students were asked to fill in a previously distributed CSI template or use an artifact template uploaded in the Zoom chat. The template had three columns, each separately labeled color, symbol, and image. Students were instructed to draw under each label how they felt about learning online. Once the art activity was completed, the students uploaded it in a shared email, or the interviewer had the student hold it up to the camera showing the image that was additional data available in the Zoom interview recording. Once the artifacts were complete, the interviews ended, and the Zoom meeting recording was uploaded and sent via private email to the researcher's private laptop. The same process continued over multiple days until all participants were interviewed.

Throughout the entire data collection process, participants' names were protected, and data were stored securely according to laws of confidentiality, ensuring the safety of all information. The initial collection of parents' and students' signatures granting participant permission, the names was collected electronically and saved in the researcher's personal computer storage. Once an interview focus group was identified, student names were coded with a number for private identification. In addition, throughout the entire data collection process, children were continually informed and ensured that they might no longer participate at any time. Skanfors (2009) strongly recommended informing children of their rights throughout the

research to demonstrate respect and integrity, valuing their rights and opinions. Practices in ethical conduct protecting children and keeping them informed were continued throughout the entire data collection process.

Data Analysis

Data analysis followed purposive steps to complete the multiphase research plan accurately. Marton (1986) described the first phase of analysis as “a kind of selection procedure based on criteria of relevance” (p. 153). The survey questionnaires were scored first according to the IMI and BPNS scoring directions, reverse scoring, and then looking for the highest averages across all items within each subscale. Ryan et al. (1991) concluded that researchers interpreting self-report measures that assess intrinsic motivation, like the IMI, need to consider how and why participants report how they do by performing a factor analysis unique to the adapted version of the new data set. The researcher utilized the scoring tool unique for each modified subscale, calculating students showing the highest levels of intrinsic motivation according to the scores. As Fulmer and Frijters (2009) explained, multiple data methods must be carefully compared and keenly integrated to ensure a reliable and valid measure of motivation.

Initial questionnaires were collected and analyzed by hand with the scoring scale. Then, statistical analysis was conducted with Excel. First, the researcher calculated Cronbach’s coefficient alpha for reliability measures validating the internal consistency of both survey questionnaires through Microsoft Excel. According to Lavrakas (2008), the alpha should be calculated before analyzing data because “specifying alpha after performing an analysis opens up the temptation to tailor significance levels to fit the results” (p. 18). The researcher calculated the alpha before analyzing the data to provide validity in the analysis further. Following the alpha results analysis, the survey questionnaires’ interval data were further analyzed with criterion-

related validity measures to examine total scores. These measures included descriptive statistical analysis in Microsoft Excel, identifying means for identifying central tendency and standard deviations to describe the scales. In addition, a multivariate analysis of variance (MANOVA) was used to compare variables from the survey questionnaire data. Once the first analysis stage was complete, data results were used to identify the participants for the next steps.

Through quantitative data analysis using descriptive statistical analysis, the researcher analyzed the results using Microsoft Excel to compute descriptive statistics. Statistical analysis included descriptive statistics, Pearson correlations, reliability analysis, and confirmatory factor analysis. Analyzing the quantitative Likert scale survey questionnaires gave value to the qualitative data measuring motivation. Once the survey questionnaire results were analyzed and students were identified as those with high scores indicating higher levels across motivational scales, they became the focus group for the remainder of the study.

The subsequent analysis stage followed interview data collection, including transcriptions, notes, artifacts, and emoji reactions. During this stage, the researcher created themes identified in the interview analysis. Pessi (2004) explained how the phenomenological approach recognized the multi-facedness of motivation focusing on interconnections and diverse ways humans experience this phenomenon. Individual themes for motivation were derived during the analysis stage since they are student created in the process of data collection (Fulmer & Frijters, 2009).

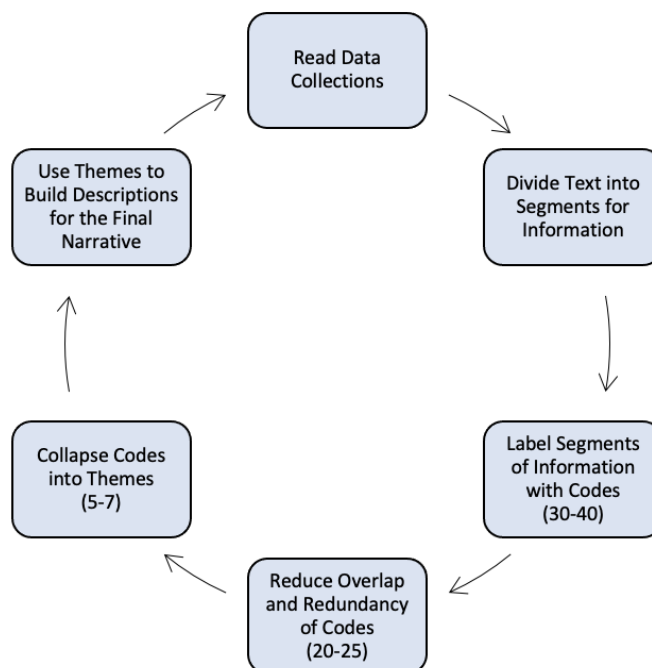
First, the transcriptions of the interviews were read in their entirety to gain a sense of the broad themes. Transcription reading was followed by distinguishing significant elements of the construct (i.e., motivation) in individual statements. Next, the researcher formulated the individual statements into overall meanings, which were then reduced to themes. Finally, these

themes were synthesized into an overall narrative description of the phenomena, which aided in creating models of motivational orientations (Creswell, 1998; Pessi, 2004).

After the second data collection was conducted during interviews, qualitative data analysis consisted of hand coding and computer software. As seen in Figure 6, the researcher used “winnowing down” procedures for data analysis (Creswell & Clark, 2004). Following the interviews, the researcher conducted an exploratory factor analysis, creating factors as they emerged from the transcripts. Meaning emerged from the students’ interpretations, perceptions, and narratives shared in the data collection. “Phenomenological analysis involves inductive rather than deductive analysis allowing themes to emerge from the interview data, and not allowing researcher bias and assumptions to guide the interpretation of data collections” (Shedivy, 2004; Fulmer & Frijters, 2009). For a thorough interpretation, the researcher conducted inductive analysis first and then deductive. The researcher must practice reflexivity while analyzing data to ensure a valid interpretation. The researcher remained aware of the importance of acknowledging data expectations and unexpected results. Marton (1986) explained how researchers conclude with descriptive categories taken from a more extensive contextual understanding, and once they are decontextualized, they may prove relevant in additional contexts. The researcher was cognizant that the study might provide unexpected themes valuable for the same themes considerably in other contexts. This qualitative data analysis examining intrinsic motivation factors in an online learning classroom was transcribed and coded, looking for significant themes, subthemes, and outliers.

Figure 6

Data Analysis Procedures: “Winnowing Down” (Creswell, & Clark, 2004)



Interview analysis required the assistance of qualitative data analysis coding software. Coding data analysis for the phenomenological study included analyzing interview data by hand and using MAXQDA software with inductive and deductive approaches. This study required a structured approach, “analyzing the data for significant phrases, developing meanings and clustering them into themes, and presenting an exhaustive description of the phenomenon” (Creswell & Poth, 2018, p. 202). Data collection in the study was mostly from interviews that required timely transcriptions and analysis looking for themes. The phenomenological study researched an experience through individual interviews requiring extensive time and field notes. The extensive interview data required multiple transcriptions with the need to check for accuracy. While offering a full-featured transcription tool, MAXQDA software also offered a variety of visual features for creating diagrams and concept maps. These tools were

advantageous for analysis, offering additional visual tools and user-friendliness. MAXQDA offers intuitive software where actions are always clearly found (Silver & Lewins, 2020). User-friendliness was essential for saving time and accurately using the software.

Besides the use of computer software, the researcher also initially analyzed the interview data by hand. Although this data could be analyzed using computer software, experts initially advise manual coding. “The primary goal of the researchers during the data analysis process in a phenomenological study is to deduce meaning out of the themes identified through initial manual coding” (Sage Research Methods Database, 2019). Manual coding allowed the researcher a more personalized approach to see the whole picture of the phenomenon being studied and identify themes before the vulnerability of limitations sometimes created in computer software analysis.

The researcher initially prepared and organized the data into digital files. Comparisons across multiple interview participants are “enabled or hindered by initial file organization” (Creswell & Poth, 2018, p. 186). MAXQDA was used to upload audio transcripts, questionnaires, and survey data. After data organization, the researcher carefully read all transcripts and field notes while memoing interpretive details. Memos are evidence of reader synthesis and descriptive summaries of the data (Creswell & Poth, 2018). Memoing was practiced throughout the analysis process while tracking the evolution of codes and themes, as recommended by Creswell and Poth. Following the reading analysis and memoing, the researcher divided the texts into segments to describe student experiences developed into themes. These segments were labeled, described, and classified into 30-40 codes. Next, the researcher examined these codes for overlaps or redundant information. Once these codes were reduced to 20-25 codes, the information was classified which takes “the text or qualitative

information apart and looking for categories, themes, or dimensions of information” (Creswell & Poth, 2018, p. 194). By collapsing the codes and categorizing the data into five to seven themes in the final winnowing stage, the data provided a “manageable set of themes to write into a narrative” (Creswell & Poth, 2018, p. 194). Identified themes contributed to the descriptive analysis for the final narrative explaining the results.

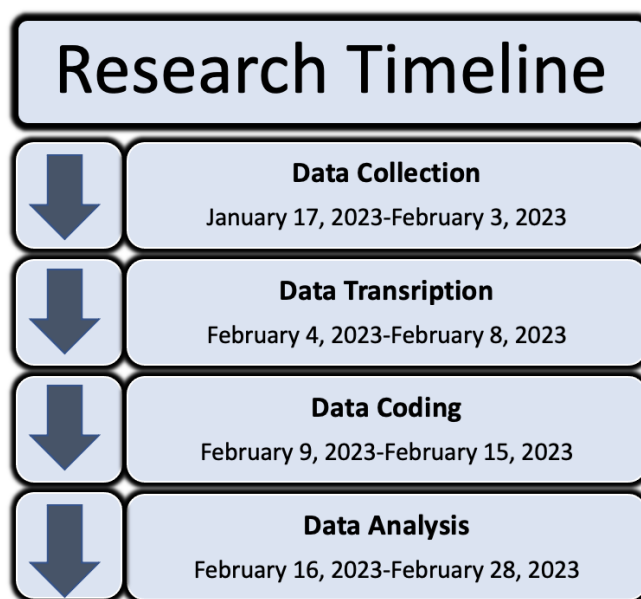
The artifacts were categorized the same way as the interview data, looking for similarities, trends, or differences in artifact results based on words, colors, and images found in their CSI drawing task. The emoji responses were also analyzed with a quantitative approach running statistical commands to identify patterns across student responses. Once interviews, artifacts, and emojis were analyzed, the researcher sought correlations between these results and the subscales in the initial survey questionnaire. In addition, i-Ready math and English language arts assessment scores were analyzed comparatively to growth scores significant to high performance in national and state norms. Comparative analysis also examined students’ experiences with intrinsic motivation learning online and their i-Ready assessment scores.

During data analysis, the researcher sought research team feedback to ensure accuracy while including alternative perceptions to increase interpretive reliability. Valid measurement makes “valid data, but validity itself depends on the collective opinion of researchers” (Bernard & Ryan, 2003, p. 104). Practicing intercoder reliability by having others check the researcher’s work during all analysis steps was conducted and critical to ensure better accuracy and validation. All measurements were administered during the second trimester of the 2022-2023 school year. During the projected two-month research process, as seen in Figure 7, data collection began in January 2023, and the final data analysis was completed by the end of February 2023. Questionnaires, interviews, artifact collections, and assessments were conducted

during these months. Data was then analyzed, looking for significant patterns, trends, and findings revealing evidence to understand better the effects of STD-based learning strategies on the effectiveness of online learning. These results were examined to evaluate evidence supporting the relevant impacts of intrinsically motivating elementary school students to improve their academic performance.

Figure 7

Research Data Collection & Analysis Timeline



Note. Research timeline dates were predictions dependent on factors that were subject to change such as IRB approval times and data collection participant availability dates.

Ethical Issues

Ethical principles are evident in the procedures stated earlier in this chapter, subtitled Research Data Security. The ethical considerations for this study included maintaining confidentiality with all research, participant anonymity, debriefing all parties involved in the research with full disclosure of research intent and procedures, and the assurance of informed

consent and voluntary participation. Additional procedures were utilized consistent with ethical research methods protecting all participants while ensuring their privacy and safety.

Ethical competency is crucial for conducting all research, especially regarding collecting data from vulnerable populations. Vulnerable research subjects include children, the participant population currently needing representation in research for online learning. Federal regulations require that IRBs give special consideration to protecting vulnerable subjects, such as children, prisoners, pregnant women, mentally disabled persons, or economically or educationally disadvantaged persons (NIH, n.d.). Considering children as research subjects, the IRB must ensure safeguards are in place to protect this vulnerable population.

The researcher took the necessary preparations and research protocols to meet the safeguards mandated by the IRB to protect child participants best. IRBs must determine if the study meets the regulatory and ethical measures to protect children's rights and welfare. IRBs might question if including a vulnerable group is necessary and if safety precautions have been taken (Gordon, 2020, p. 38). Safeguards for children participants include parental permission, child assent, and restrictions on risk. The researcher obtained written permission from the legal guardians of the child participants and allowed the children to be included in the decision-making process, even with verbal communication. It is important to note that if a parent provided permission, the child still knew it was their choice to participate in the research conducted.

Each child participant was informed throughout the research process that they might choose to participate no longer. In line with the postulation of Berson et al. (2019) in their study, this study believes that gaining the child's consent, regardless of age, is necessary to act ethically and responsibly. Even if children's consent is granted, the researcher maintained open communication and ongoing consent from the parents. Parental communication with consenting

parents consisted of reminder emails for upcoming student participation, follow-up messages after the completion of interactions, and reminders that they or their child may opt out of the study at any time. Ongoing communication with parents provided complete transparency for all participants and parents. As explained in this chapter, safety measures were implemented while following the privacy and protection of all names and information considered during the research.

While ensuring these safeguards are in place, it is also critical to maintain mindfulness in the role of interviewer, considering the different mindsets and maturity of the child interviewed. Gordon (2020) explained that based on variations in child maturity levels, “all children are vulnerable because they lack the fully developed capacity for autonomous decision-making that comes with developmental maturity” (p. 35). The researcher’s experience and competency of previous work with children the same ages as the participants were necessary to conduct a nonbiased approach to interviewing and recording data while at the same time capable of providing a safe and comfortable environment for them. The researcher did not influence the child’s responses and, at the same time, ensured safety, comfort, and, when needed, interpretation for clear communication. In addition, all participants were informed that they may discontinue participating in the study at any time and that all personal data would be deleted and destroyed immediately upon opting out.

The researcher conducting interviews ensured safety measures for the participants as a validated staff members from their school site. While providing comfort to parents and children, knowing the interviewer was a school staff member, this identification also displayed researcher bias. While having some bias due to knowledge of students’ schools and teachers, the researcher simultaneously had experience with and access to working online in the same environment the

students were interviewed. In addition, they had years of experience studying and working with children the same age as the participants gave the researcher bias in perspective. However, at the same time, this knowledge was necessary to know the best way to communicate clearly and safely with a child. These authors suggested a phenomenological approach to research as one way to ensure research safety with children better. Creswell and Poth (2018) wrote that, “Conducting interviews seems less intrusive in phenomenological projects than in high-level case studies” (p. 176). This less intrusive method helped gain children’s perspectives based on the interview questions but also allowed the freedom to choose to answer questions. Familiarity with the interviewer provided a less intrusive method for data collection, with the vulnerable participants needing total ethical safety measures.

Taking a qualitative phenomenological approach provides a research plan consistent with allowing ethical research, honest data collection, and valid results. In congruence with necessary safeguards for child participants, the methodology for designing how research is done is just as crucial as ensuring ethical principles. Qualitative research is a more consistent research approach supportive of ensuring child safety. The researcher must maintain “an acceptance that they own children’s knowledge of their worlds and that they are the experts in knowing and recording their worlds” (Burke, 2005, p. 31). Careful notetaking while remaining honest and nonbiased with recording data were imperative for valid research results. Throughout the research steps, it was critical to “remain mindful of my position as an adult researcher, and of children’s marginalized position in society, to help ensure that the findings and analysis best represent the children’s perceptions of their experiences” (Berson et al., 2019, p. 6). This research plan stemmed from clear and transparent preparation for careful implementation and data recording with all participants. Safe and accurate storage of all methods, materials, and participant information is

essential to maintaining ethical research. Implementing safeguarding measures mandated by IRB in combination with suggested competencies necessary for valid data recording provided the researcher granted permission to interview children. Conducting research with child participants has the potential for discovering valuable information with an incredible opportunity for hearing the voices of those who matter to what motivates them with online learning.

The truth of the child's reality and hearing their perception needed to be added to the current research on online learning. With a careful and well-planned methodology created with safeguards for all participants, research with children participants allowed an exciting opportunity to examine what makes children intrinsically motivated to learn online. Children must be heard when identifying and designing impactful changes to improve our public education system. It takes a competent and mindful researcher to conduct meaningful and ethical research proven to be humane and valid. The "more reliable safeguard is provided by the presence of an intelligent, informed, conscientious, compassionate, responsible investigator" (Beecher, 2001, p. 372). By conducting ethical competence throughout all the steps of research, the principles of ethics were maintained, and children's voices were heard.

Summary

With advancements in educational settings continuously expanding with more and more students learning on the Internet, motivating them to learn online is a critical factor for educators to consider and cultivate for successful e-learning. Now that online learning has become a norm in our society and is offered in most cities and school districts, education needs to meet these learners fully prepared with the best instructional practices to facilitate the ideal learning environment to reach their full academic potential. With unlimited resources available to the distance learning instructor and universal ways to connect with diverse populations through the

Internet, online learning can expand learning opportunities beyond the limiting conditions of a traditional classroom. The online classroom, if created in a positive motivational way, meeting the needs of all types of learners, can provide students with unlimited opportunities to reach their highest levels of learning. The study sought to explore how elementary students experience intrinsic motivation in learning online with the possibility of exemplifying a successful educational alternative to traditional schooling. Students experiencing intrinsic motivation to learn successfully online demonstrate new educational opportunities for participating in a limitless environment amid the current online learning revolution.

CHAPTER 4: RESULTS

This study sought to explore the experience of intrinsic motivation in online learning. Quantitative data collections were conducted to better understand this phenomenon. The research data revealed answers in support of the study's four specific research questions:

1. How do students experience intrinsic motivation in online learning?
2. How do students describe the experience of intrinsic motivation in online learning?
3. What intrinsically motivates students in online learning?
4. How does the experience of intrinsic motivation relate to student academic performance?

Mixed methods of data collection, along with intricate and detailed analysis of collected student data, provided ample information to answer the four research questions. Students experience intrinsic motivation to learn with positive words of recognition, individualized learning instruction, personalized feedback, and internalized feelings of capability and accomplishment. The study revealed multiple students' perceptions that contributed to meaningful data synthesized into an authentic description of how students experience the phenomenon of intrinsic motivation while learning online.

The purpose of this study was to explore the experience of elementary students with intrinsic motivation while learning online while also identifying any potential links to academic performance. To achieve this purpose, the researcher collected and analyzed students' authentic perceptions of motivation and online learning, as well as their current academic performance in ELA and math i-Ready assessments. This chapter presents a descriptive analysis of the study, including demographics, a survey questionnaire, and interview results, as well as an i-Ready academic assessment correlational analysis.

Participant Demographics

Based on parent and student responses to requests for voluntary participants, only 30 of the 117 possible participants responded with written consent to participate from the parents and students. Of the 30 volunteers, five students were excluded from the study because they did not fully complete or submit the survey questionnaire. The final participant total was 25 students from grades first through sixth. Table 4 includes demographic information from the student volunteers who participated in the initial data collection stage and completed the survey questionnaires examining intrinsic motivation while learning online.

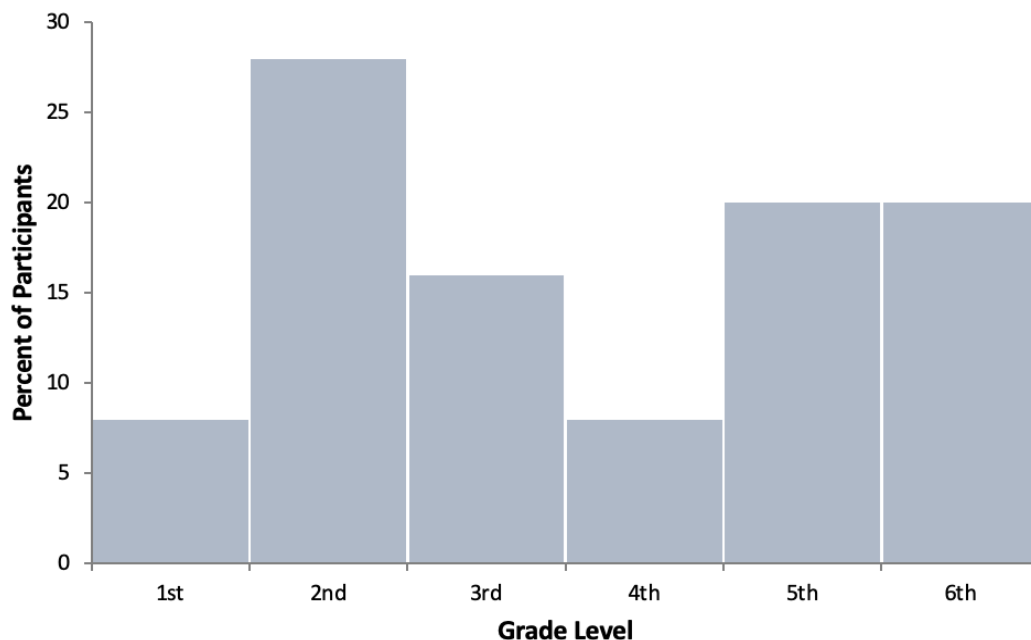
Table 4

Participants' Demographic Statistics: Gender, Age, and Grade Level

Participants	Gender	Age	Grade Level
P01	Male	7	First
P02	Female	7	Second
P03	Female	8	Second
P04	Male	9	Third
P05	Female	9	Third
P06	Female	9	Third
P07	Male	9	Third
P08	Female	9	Fourth
P09	Male	11	Fifth
P10	Male	11	Fifth
P11	Male	10	Fifth
P12	Male	11	Fifth

P13	Male	11	Sixth
P14	Female	11	Sixth
P15	Female	7	Second
P16	Female	7	Second
P17	Female	11	Sixth
P18	Male	7	Second
P19	Male	12	Sixth
P20	Female	7	Second
P21	Male	9	Fourth
P22	Female	7	Second
P23	Male	7	First
P24	Male	11	Sixth
P25	Male	10	Fifth

Participants included in the study were comprised of students from each grade level in first grade through sixth grade, as seen in Figure 8. The highest percentage of participants were in second grade, equaling 28% ($n = 7$) of the total of 25 participants. From the total ($n = 25$), 56% of participants were male and 44% female, ranging from ages seven to 13. Student participants included a wide range of mixed ages from six different grade levels, which provided a valuable sample population representative of elementary students.

Figure 8*Percentages of Grade Level Participants*

After analyzing the demographic data of the participants, the researcher determined that these students were appropriate for exploring the experience of intrinsic motivation among elementary-age students based on the criterion sampling necessary for a phenomenological study. Purposeful sampling determined elementary students spanning different grade levels would allow for multiple age perspectives of online learning necessary for exploring the phenomenon of intrinsic motivation.

Quantitative Data Analysis

The study incorporated quantitative research methods, including the analysis of survey questionnaires, interview emoji responses, and correlational analysis of i-Ready English language arts and math assessments. To ensure the most valid way of conducting a multimethod triangulation data analysis, the quantitative research was conducted and analyzed at different times during the research phases.

The first phase included quantitative data analysis, which helped to inform subsequent data collections and interpretations in the final analysis stages. This approach ensured that each data result contributed to the meaning and direction of the next phase, resulting in a comprehensive and integrated analysis of the study's findings.

The OLIMI and BPNS-OL Survey Questionnaires

The analysis began with the coding of the data gathered from the administration of the two-part survey questionnaire, including the OLIMI and the BPNS-OL Likert scales. This preliminary data analysis was required to determine evidence of students experiencing intrinsic motivation while learning online.

The typical time to complete the two-part survey questionnaire was approximately 24 minutes, with a 100% completion rate for the finalized 25 participants ($n = 25$) in the study. The OLIMI and the BPNS-OL survey questionnaires both consisted of 21 items plus two open-ended questions, for a total of 42 Likert-type questions and four open-ended questions. Initial accuracy scores were conducted with both survey results based on Cronbach's Alpha formula, which measures the internal consistency of each survey questionnaire. Completed survey questionnaires for the OLIMI and the BPNS-OL both produced an accuracy score as measured by Cronbach's Alpha of $\alpha = 0.68$ for the surveys. Both values of $\alpha = 0.68$ indicated a reasonable degree of dependability. Alpha measures between 0.6 and 0.7 indicate an acceptable level of reliability (Hulin et al., 2001). After validating the accuracy of each questionnaire, the scores were analyzed further using computations made in Excel. Descriptive statistics, frequencies, and Pearson correlations between the two questionnaire results were computed and evaluated.

The results of this analysis of the questionnaires indicated that all participants had experienced intrinsic motivation, as evidenced by their final scores. Final scores revealed a

participant score range of 21.9 as the lowest score total and 41.25 as the highest score. Table 5 displays individual participant score results for the OLIMI and BPNS-OL, as well as their total score. Results indicated the higher the score (the highest being 42), the more intrinsic motivation a student experienced.

Table 5

Final Scores for the Survey Questionnaire Indicating Intrinsic Motivation

Participants	OLIMI Score Points Possible 1-21	BPNS-OL Score Points Possible 1-21	Total Points Possible 2-42
P1	21	20.25	41.25
P2	13.9	10.6	24.5
P3	18.6	17	35.6
P4	16.2	13.7	29.9
P5	16.6	13.4	30
P6	18.6	18.7	37.3
P7	16.8	15	31.8
P8	13.5	15.7	29.2
P9	16.9	18.7	35.6
P10	13.5	14.2	27.7
P11	17.7	17.4	35.1
P12	17.1	15.4	32.5
P13	12.9	15.5	28.4
P14	12.1	16.9	29
P15	9.4	12.5	21.9
P16	13.5	15.4	28.9

P17	16.5	19.8	36.3
P18	16.6	11.7	28.3
P19	17.7	18.6	36.3
P20	14.8	13.7	28.5
P21	14.7	15	29.5
P22	16	13.7	29.7
P23	17.8	16.2	34
P24	18.1	15.4	33.5
P25	16.2	16.9	33.1

Note. The OLIMI included four subscales measuring intrinsic motivation. The subscales included interest/enjoyment, perceived competence, perceived choice, and pressure/tension. The range did not include the factor pressure/tension which is presented in a separate scale. The pressure/tension category negates evidence of intrinsic motivation.

Further quantitative analysis was conducted to explore detailed explanations of student experiences with intrinsically motivating factors revealed through the different subcategories in each survey questionnaire based on SDT factors of intrinsic motivation. The OLIMI scored students' responses according to the subcategories: interest/enjoyment, perceived competence, perceived choice, and pressure/tension.

Descriptive Statistics for the OLIMI

Averages for the OLIMI complete participant score in each subscale are indicated in Table 6. Scaled interest/enjoyment scores were especially significant, revealing the highest level of experiences with intrinsic motivation. The interest/enjoyment subscale is a self-report of intrinsic motivation (Center for Determination Theory, 2022). Interest/enjoyment scores were defined by reverse scoring and averaging the total number of student responses to 42 statements

on a scale of 1-7, with response categories including four subscales: interest/enjoyment, perceived choice, perceived competence, and pressure/tension. The averages within the categories were based on a scale of 1-7. Each item's answer choice ranged from 1 (*not at all true*), 4 (*somewhat true*), and 7 (*very true*).

Table 6

Descriptive Statistics for the OLIMI

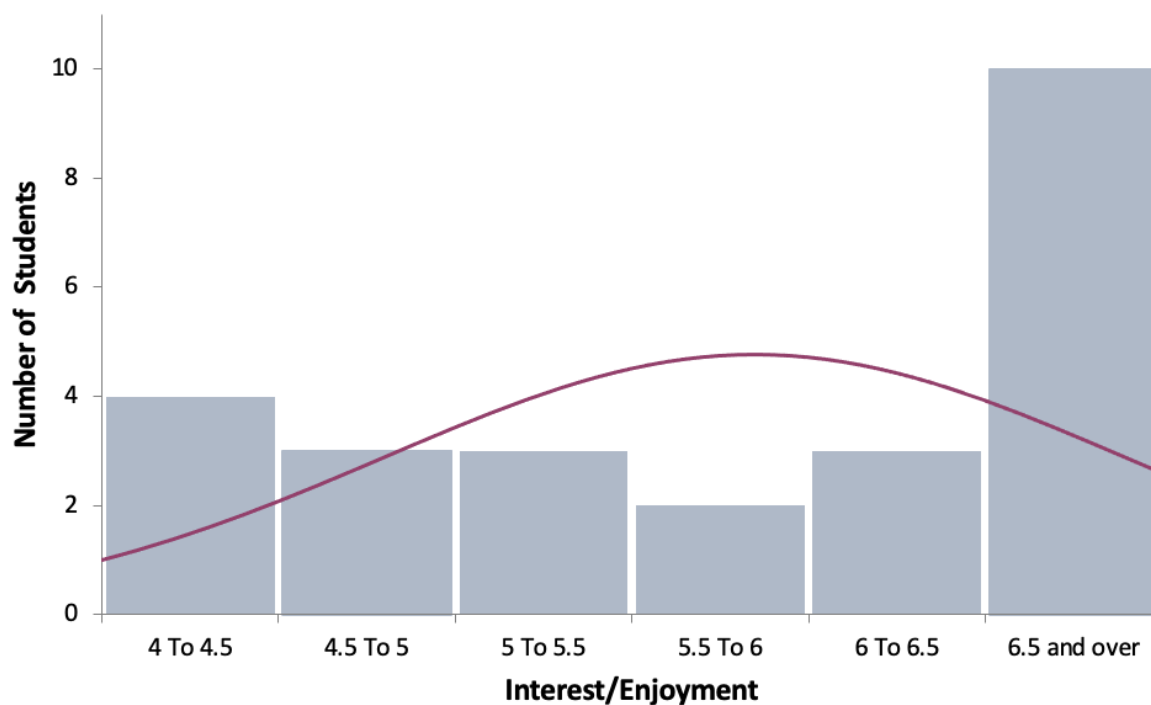
Subscales	Mean	Standard Deviation (<i>n</i> = 25)	Range (<i>n</i> = 25)
Interest/Enjoyment Total Score	5.84	1.04	2.9
Perceived Competence Total Score	5.47	0.88	3.0
Perceived Choice Total Score	4.54	1.56	6.0
Pressure/Tension Total Score	2.56	1.17	4.8

Note: The OLIMI included four categorized subscales (Interest/Enjoyment, Perceived Competence, Perceived Choice, and Pressure/Tension). The number of questions for each category included seven questions for scoring interest/enjoyment, five for perceived competence, five for perceived choice, and five for pressure/tension. Except for a lower level of pressure or tension indicative of intrinsic motivation, all totals indicated higher rates of the subscale experienced, indicating higher levels of intrinsic motivation.

All participants (*n* = 25) indicated levels of interest and enjoyment, with the lowest score being 4.1 (*n* = 1) and the highest score being seven (*n* = 7). As seen in Figure 9, 28% of students scored the highest score possible for interest/enjoyment. The OLIMI scores indicated that interest and enjoyment were the highest subcategory of experiencing intrinsic motivation ($M = 5.85$, $SD = 1.04$). Students experienced high levels of intrinsic motivation with feelings of interest and enjoyment in class. Examples of how they experienced interest and enjoyment included positive peer relationships while feeling welcomed and supported in their class.

Figure 9

Students' OLIMI Scores for Interest/Enjoyment ($n = 25$)



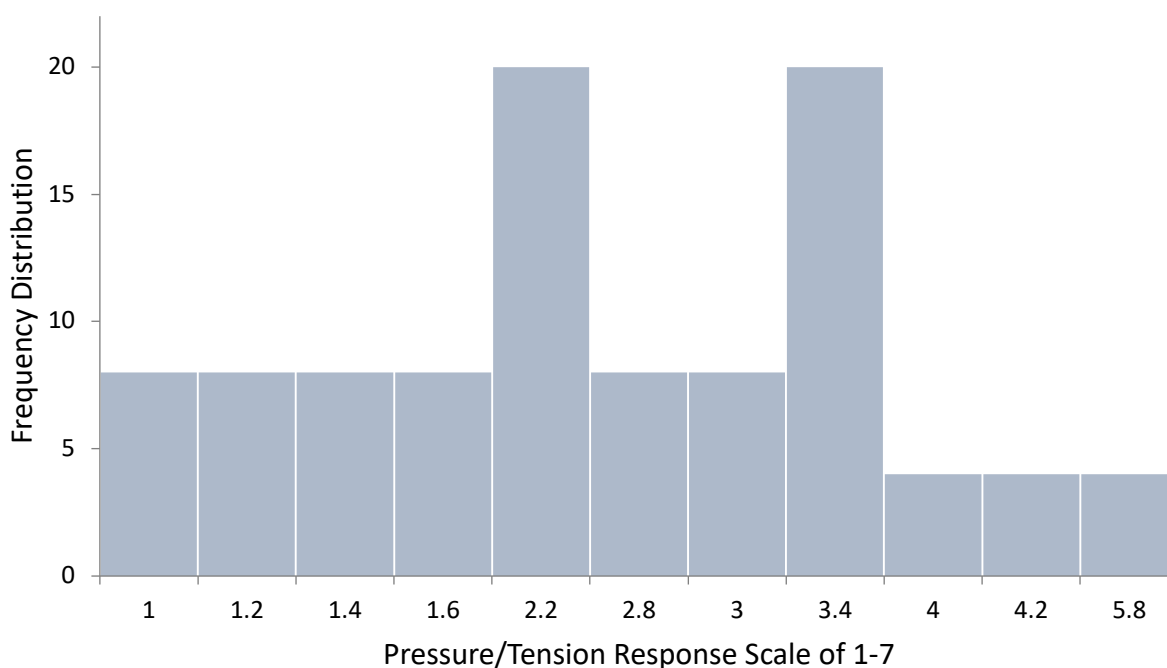
Note. The horizontal trendline illustrates the mean of 5.85.

The pressure/tension scale revealed negative results in opposition to intrinsic motivation, revealing that pressure and tension while learning online are inversely related to positive learning outcomes as measured by increased in scores. In other words, when students felt pressure or tension, motivation was lacking. As observed in Figure 9, 20% of the students out of the total participants ($n = 25$) experienced pressure and tension, as indicated by the scale scores of one to seven. Most students (80%) experienced low pressure and tension levels, indicating possible feelings of safety and comfort in their online classes. Several students expressed feeling relaxed and comfortable learning online from their home setting. Students' responses also revealed a range from one being the lowest to 5.8 being the highest score for pressure/tension. Thirty-two

percent of students ($n = 8$) scored between one and 1.6, 28% of students ($n = 7$) scored between 2.2 and 2.8, 28% of students ($n = 7$) scored between three and 3.4, and 12% of students ($n = 3$) scored between 4 and 5.8.

Figure 10

OLIMI Pressure/Tension Score Results ($n = 25$)



Descriptive Statistics for the BPNS-OL

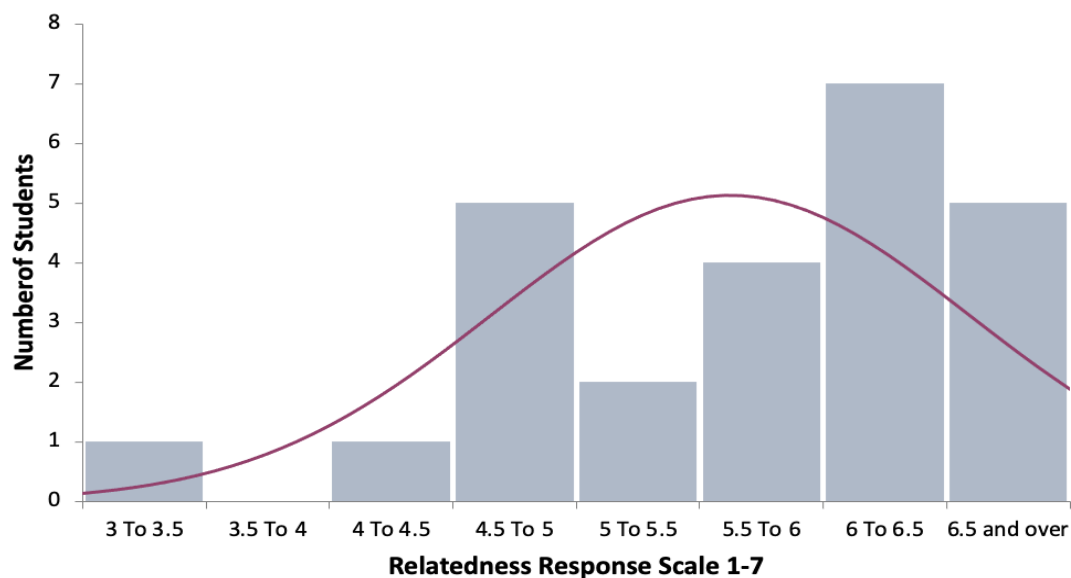
The BPNS-OL complete participant score averages in each subscale are indicated in Table 7. Averages were based on a scale of 1-7 within the autonomy, competence, and relatedness subscales. Each item's answer choice ranged from 1 (*not at all true*), 4 (*somewhat true*), and 7 (*very true*). According to the results, all students ($n = 25$) experienced a level of autonomy, competence, and relatedness, with autonomy being the lowest ($M = 4.66$, $SD = 1.09$) and relatedness being the highest ($M = 5.62$, $SD = 0.97$).

Table 7*Descriptive Statistics for the BPNS-OL (n = 25)*

Subscales	Mean	Standard Deviation	Range
Autonomy Total Score	4.66	1.09	4.7
Competence Total Score	5.41	1.07	3.9
Relatedness Total Score	5.62	.97	4.0

Note. Each categorical scale score point value was 1-7, with 7 being the highest score.

The relatedness scaled scores were specifically significant, revealing the most outstanding experience with intrinsic motivation among the three subscales. As seen in Figure 11, out of the total students ($n = 25$), 48% ($n = 12$) scored between six and seven, indicating the highest levels on the relatedness scale. The most common subcategory of experiencing intrinsic motivation, according to the PBNS-OL, was relatedness ($M = 5.62$, $SD = 0.97$).

Figure 11*BPNS-OL Relatedness Score Results (n = 25)*

Note. The horizontal trendline illustrates the mean of 5.62.

Correlational Analysis of the OLIMI and BPNS

A Pearson correlation coefficient was computed to assess the linear relationship between the OLIMI total scores in each subcategory, including interest/enjoyment, perceived competence, perceived choice, and BPNS-OL scores for autonomy, competence, and relatedness. See Table 8 for specific correlational data. There was a moderately positive correlation between the OLIMI perceived choice score and the OLIMI perceived competence, $r(24) = 0.40, p = 0.04$. The OLIMI perceived competence score and the BPNS-OL autonomy score were strongly correlated, $r(24) = 0.56, p = 0.002$. The OLIMI perceived competence and the BPNS-OL relatedness scores were moderately correlated; in other words, $r(24) = 0.46, p = 0.02$. The OLIMI perceived choice scores and the BPNS relatedness scores were also moderately correlated, $r(24) = 0.39, p = 0.04$. The BPNS-OL autonomy scores positively correlated with the BPNS-OL relatedness scores, $r(24) = 0.45, p = 0.02$.

Table 8

Pearson Correlations Between OLIMI and BPNS-OL Factors of Intrinsic Motivation ($n = 25$)

Variables	1	2	3	4	5	6
OLIMI Interest/Enjoyment Score	-					
OLIMI Perceived Competence Score	.57	-				
OLIMI Perceived Choice Score	.37	.04*	-			
BPNS-OL Autonomy Score	.94	.002**	.07	-		
BPNS-OL Competence Score	.24	.29	.11	.39	-	
BPNS-OL Relatedness Score	.95	.02*	.04*	.02*	.05	-

Note. * $p < .05$. ** $p < .01$.

The quantitative analysis of the survey questionnaires revealed participants experiencing intrinsic motivation while showing various levels according to the data results. According to the

final survey questionnaire scores, all 25 participants revealed a percentage of intrinsic motivation. Therefore, the 25 participants qualified to participate in the interviews exploring students who have experienced intrinsic motivation while learning online.

Interview Emoji Response: Quantitative Results

Emoji responses used during interviews had minor significance because only 12% of participants ($n = 3$) used emojis in addition to their verbal responses while communicating their answers to interview questions. See Table 9 for the three participants' specific interview questions and emoji responses. Allowing students to use emojis gave them additional choices for responding nonverbally, which is vital for younger populations (Riley, 2001). Despite the low number of uses, students did acknowledge that the option was available at the beginning of each interview. All students were familiar with using emoji responses while participating in Zoom.

Table 9

Participant Emoji Responses Used During Interviews ($n = 25$)

Participant & Grade Level	Interview Questions	Emoji Response	Meaning
P16 Second Grade	Q1 What do you enjoy most about learning online?		Good, like, yes, or thumbs up
P18 Second Grade	Q1 What do you enjoy most about learning online?		Funny or pleasing
P25 Fifth Grade	Q11 Do you ever get to choose which activities to do or is it always the teacher's choice?		Genuine happiness positive feelings

A final quantitative data analysis was conducted to seek answers to the research question: How does the experience of intrinsic motivation relate to student academic performance? How does the experience of intrinsic motivation relate to student academic performance? Previously mentioned results indicated that students' perceptions of experience with motivation and academic achievements were evident with individualized instructional support and diverse subject and lessons offered. The students perceived motivation to learn with exciting content in lessons and flexibility with assignment completion timeframes. A correlational analysis was conducted between the survey questionnaire's total final scores and individual student scores from district i-Ready ELA and math assessments.

Correlational Analysis of Survey Scores and i-Ready Assessments

The final quantitative analysis compared the survey questionnaire OLIMI and BPNS subcategory scores to mid-year i-Ready ELA and math assessment data. The final scores for the 42-point survey questionnaire responses were compared to the i-Ready ELA and math growth scores by conducting a Pearson correlation. This analysis assessed the linear relationship between intrinsic motivation and academic performance according to i-Ready stretch growth.

Results of the analysis between the combined total scores, including all subcategories in the OLIMI and BPNS-OL and i-Ready ELA and math stretch growth scores, are seen in Table 10. The final OLIMI and BPNS-OL scores and the i-Ready ELA and Math stretch growth scores only showed correlations between the i-Ready ELA and Math growth scores. The correlation between ELA and Math i-Ready stretch growth scores was strong, with $r(24) = 0.83, p = 1.72e-7$. Total survey questionnaire scores had a weak negative correlation with ELA stretch growth scores, $r(24) = -0.30, p = 0.13$. There was also a weak correlation between the Math stretch growth scores, with $r(24) = -0.20, p = 0.32$.

Table 10

Correlational Analysis Between Survey Questionnaire Scores and i-Ready ELA and Math

Assessments (n = 25)

Variables	1	2	3
OLIMI & BPNS Total Score	-		
ELA i-Ready Stretch Growth	.13	-	
Math i-Ready Stretch Growth	.32	1.72e-7**	-

Note. * $p < .05$. ** $p < .01$.

Further correlational analysis was performed between the subcategories in both the OLIMI and BPNS-OL with the i-Ready ELA and math assessment scores. The Pearson correlation between ELA i-Ready growth scores and each OLIMI subcategory score, including interest/enjoyment, perceived competence, perceived choice, and pressure/tension, ELA i-Ready growth scores were weakly correlated with interest/enjoyment $r(24) = 0.09$, $p = 0.64$, perceived competence $r(24) = -0.37$, $p = 0.06$, perceived choice $r(24) = -0.12$, $p = 0.56$, and pressure/tension, $r(24) = 0.25$, $p = 0.22$ (Table 11).

Table 11

Pearson Correlations Between OLIMI Subcategory Scores and ELA i-Ready Growth Scores (n = 25)

Variables	1	2	3	4	5
ELA i-Ready Growth Scores	-				
OLIMI Interest/Enjoyment Score	.64	-			
OLIMI Perceived Competence Score	.06	.57	-		
OLIMI Perceived Choice Score	.56	.37	.04*	-	
OLIMI Pressure/Tension Score	.22	.11	.04*	.11	-

Note: * $p < .05$. ** $p < .01$.

An additional correlation was conducted between the OLIMI subcategories and the i-Ready math growth scores, as seen in Table 12. Math i-Ready growth scores were weakly correlated with all OLIMI subcategories: interest/enjoyment, $r(24) = 0.19, p = 0.35$; perceived competence, $r(24) = -0.30, p = 0.14$; perceived choice, $r(24) = 0.06, p = 0.74$; and pressure/tension, $r(24) = 0.33, p = 0.10$.

Table 12

Pearson Correlations Between OLIMI Subcategory Scores and Math i-Ready Growth Scores ($n = 25$)

Variables	1	2	3	4	5
Math i-Ready Growth Scores	-				
OLIMI Interest/Enjoyment Score	.35	-			
OLIMI Perceived Competence Score	.14	.57	-		
OLIMI Perceived Choice Score	.74	.37	.04*	-	
OLIMI Pressure/Tension Score	.10	.11	.04*	.11	-

Note. * $p < .05$. ** $p < .01$.

Another correlational analysis was conducted, like the previously mentioned math analysis. This analysis was with the i-Ready assessments and the subcategories of the OLIMI. As seen in Table 13, ELA i-Ready growth scores were computed to assess relationships with subcategory scores from the BPNS-OL, including autonomy, competence, and relatedness. The ELA i-Ready score had weak correlations with autonomy scores $r(24) = -0.32, p = 0.11$, and competence scores $r(24) = -0.10, p = 0.61$. The correlation between ELA i-Ready growth and relatedness scores was moderately negative, with $r(24) = -0.44, p = 0.02$.

Table 13

Pearson Correlations Between BPNS-OL Subcategory Scores and ELA i-Ready Growth Scores

($n = 25$)

Variables	1	2	3	4
ELA i-Ready Growth Scores	-			
BPNS-OL Autonomy Score	.11	-		
BPNS-OL Competence Score	.61	.04*	-	
BPNS-OL Relatedness Score	.02*	.02*	.05	-

Note. * $p < .05$. ** $p < .01$.

The final quantitative correlational analysis with academic assessment scores was between math i-Ready growth scores and the subcategories of the BPNS-OL. There were moderately weak correlations between math i-Ready growth scores and autonomy scores, $r(24) = -0.34$, $p = 0.08$, competence scores, $r(24) = -0.24$, $p = 0.23$, and relatedness scores $r(24) = -0.29$, $p = 0.14$ (See Table 14).

Table 14

Pearson Correlations Between BPNS-OL Scores and Math i-Ready Growth Scores ($n = 25$)

Variables	1	2	3	4
Math i-Ready Growth Scores	-			
BPNS-OL Autonomy Score	.08	-		
BPNS-OL Competence Score	.23	.04*	-	
BPNS-OL Relatedness Score	.14	.02*	.05	-

Note. * $p < .05$. ** $p < .01$.

While correlations between academic growth and questionnaire scores were weak, there were significant correlations between survey score subcategories, indicating levels of experience

with intrinsic motivation according to the OLIMI and BPNS-OL results. In addition, answers to open-ended questions from the survey questionnaires and interview responses indicated more evidence of participants experiencing intrinsic motivation while learning online. Evidence of intrinsic motivation is revealed more in the qualitative data analysis findings.

Findings of Qualitative Research

Qualitative research results include analysis of open-ended questions and answers from survey questionnaires, interview responses, and artifact results. All qualitative data findings were analyzed to answer the primary research question: How do students experience intrinsic motivation in online learning? All open-ended survey questions and interview questions were answered entirely by all 25 student participants. Each participant also completed and explained the artifact task in writing and verbally. Each form of qualitative data were coded and analyzed using inductive and deductive approaches while maintaining awareness of researcher bias and susceptibility to reactivity. Having mindful awareness of susceptibility to bias in data analysis, the researcher maintained an open mind throughout the data reduction steps, using brackets to “winnow down” the data and eventually collapsing codes into themes (Creswell & Clark, 2004).

The researcher began the qualitative data analysis by grouping the data into themes found through analysis of word and phrase frequencies. While analyzing qualitative data, quantitative methods were embedded into the analysis. Utilizing quantitative measures such as frequency analysis is known as “quasi-statistics” (Becker, 1970). As Maxwell (2013) noted, it is necessary to analyze quantitative and qualitative data for accurate analysis; therefore, this study utilized quasi-statistics to analyze the data with precision. While recording the frequency of codes is sometimes considered purely quantitative, it does provide detailed findings of the most common words or phrases in data responses (Hays & Singh, 2012). Creswell and Poth (2018) explained

that using frequencies with qualitative analysis conveys a similar meaning for all responses. Using frequencies may eliminate the need for participant-unique individual data needing accurate reporting to represent the true phenomenon being explained accurately. Therefore, the researcher used deductive and inductive coding approaches before counting frequencies. The researcher analyzed the data, searching for codes that best capture the individual participants' experiences. The researcher worked to maintain authenticity by exposing both positive and negative factors expressed in the final analysis.

Then, codes were developed from the findings, producing prevalent themes. In addition, the researcher began with themes considered relevant for intrinsic motivation, including SDT's three essential motivation factors. These themes included autonomy, competence, and relatedness, which were used as guides for finding relevant correlational data that fit into these themes. Once a combination of inductive and deductive coding was established, the researcher combined the findings into the three themes—autonomy, competency, and relatedness—with four subcategories within each theme.

Data analysis was differentiated according to the type of data collected to create a rich and detailed narration of students' experiences of intrinsic motivation. Survey questionnaire open-ended question responses were collapsed into two categories: intrinsic motivation and extrinsic motivation. At the same time, artifact data were analyzed according to students' thoughts and feelings about online learning through frequency analysis.

Survey Questionnaire: Open-Ended Question Findings

The first phase of the data analysis included a qualitative analysis of four open-ended question responses from the survey questionnaires. The OLIIMI and the BPNS-OL each contained two open-ended questions for four questions per survey questionnaire. One hundred

percent of student participants responded to the four questions. All participant responses are categorized based on intrinsic or extrinsic motivation themes. Defining intrinsic versus extrinsic behavior was based on the SDT factors of intrinsic motivation. These factors indicate that intrinsic motivational behavior is based on the human need for autonomy, competency, and relatedness (Niemic & Ryan, 2009). Intrinsic behavior includes actions done merely for the pleasure of doing them, while extrinsic behavior is conducted for an external reward. Responses were categorized according to the factor of motivation they represented. Findings from the open-ended questions in the survey questionnaire contributed to answering the third research question: “What intrinsically motivates students in online learning?”

Analysis of OLIMI Open-Ended Questions

The OLIMI included two open-ended questions created based on interest and enjoyment factor statements within the questionnaire. These themes include teacher, parent, and internal influences on motivation. The first question in the OLIMI was, “What motivates you to do your schoolwork learning online?” The most frequent response was grades (28%). The least frequent responses were “myself” (4%), “to feel successful” (4%), and “for fun” (4%). 28% of respondents were intrinsically motivated to do their schoolwork online, while 72% were extrinsically motivated (See Table 15). For participant percentages of intrinsically motivated students versus extrinsically motivated students, see Figure 12.

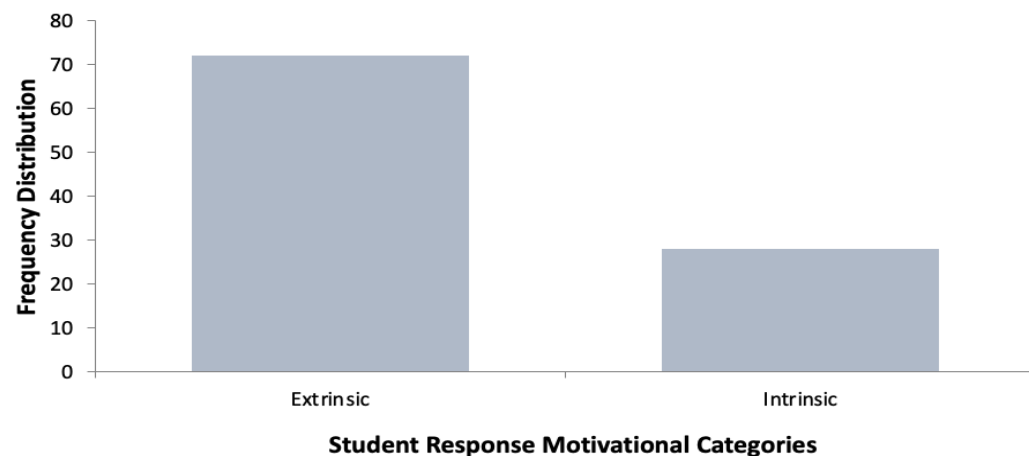
Table 15

Thematic Analysis of the Scores from the First Open-Ended Question from the OLIMI

What motivates you to do your schoolwork online?		
Theme/Response	Total ($n = 25$)	%
Intrinsically Motivated		
Myself	1	4%
Feel successful	1	4%
To learn	2	8%
Future success	2	8%
It is fun	1	4%
Extrinsically Motivated		
Grades	7	28%
Parents	3	12%
Teacher	2	8%
Free time	3	12%
Must	1	4%
Being home	2	8%

Figure 12

Extrinsic and Intrinsic Factors of Motivation According to Student Responses to the First Open-Ended Question on the OLIMI: What Motivates You to Do Your Schoolwork Online?



The second open-ended question in the OLIMI was based on enjoyment: “What do you like most about learning online?” As seen in Table 16, 60% of total students ($n = 25$) like the intrinsic factors of learning online, such as flexibility for time management and learning more. Forty percent of students preferred more extrinsic aspects of online learning, such as seeing friends and teachers and participating in various academic and enrichment subjects such as reading, math, and art (See Figure 13).

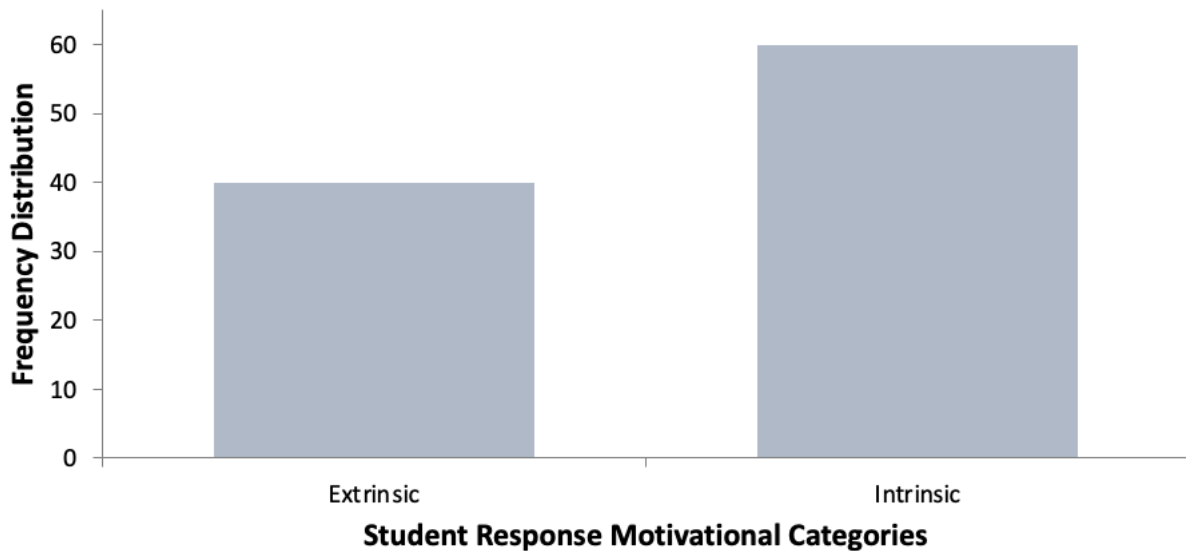
Table 16

Thematic Analysis of Scores from the Second Open-Ended Question from the OLIMI

What do you like most about learning online?		
Theme/Response	Total ($n = 25$)	%
Intrinsically Motivated		
Able to work independently	1	4%
Flexibility of time management	5	20%
Feel safe	1	4%
Learning more things	4	16%
Comfortable at home	1	4%
Learn better online	3	12%
Extrinsically Motivated		
Friends	1	4%
Teacher	1	4%
Art	2	8%
Writing	2	8%
Math	2	8%
Reading	1	4%
ELA (English Language Arts)	1	4%

Figure 13

Extrinsic and Intrinsic Factors of Motivation According to Student Responses to the Second Open-Ended Question: What Do You Like Most About Online Learning?



Analysis of BPNS-OL Open-Ended Questions

The first open-ended question from the BPNS-OL was: Why do you complete your assignments for your online class? As Table 17 shows, most student participants (80%) were motivated by extrinsic factors, such as grades (28%), having free time later (16%), and parents (12%). Fewer participants (12%) were intrinsically motivated, using language like “to learn,” “my responsibility,” and “I like it.” Eight percent of participants had no stated reason for completing assignments for their online classes.

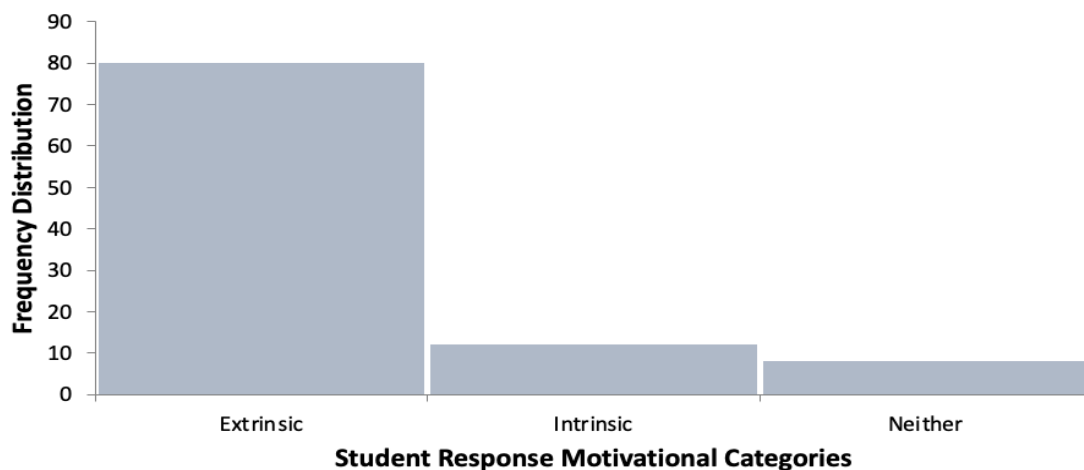
Table 17

Thematic Analysis of Scores from the First Open-Ended Question from the BPNS-OL

Why do you complete assignments for your online class?		
Theme/Response	Total ($n = 25$)	%
Intrinsically Motivated		
To learn	1	4%
My responsibility	1	4%
I like it	1	4%
Extrinsically Motivated		
Grades	7	28%
Parent	3	12%
Teacher	2	8%
I have to	3	12%
Free time later	4	16%
Show others I participate	1	4%
No reason	2	8%

Figure 14

Extrinsic and Intrinsic Factors of Motivation According to Student Responses to the First Open-Ended Question in the BPNS-OL: Why Do You Complete Your Assignments for Your Online Class?



The second open-ended question from the BPNS-OL was based on feelings of success learning online: “What makes you feel successful learning in your online class?” As shown in Table 18, total student responses were divided into intrinsic and extrinsic categories. Forty-eight percent of students felt successful because of internalized feelings of pleasure or success. Forty-four felt successful based on external factors such as parent or teacher responses, assignment completion, and grades. Eight percent of participants did not know what made them feel successful in their online classes.

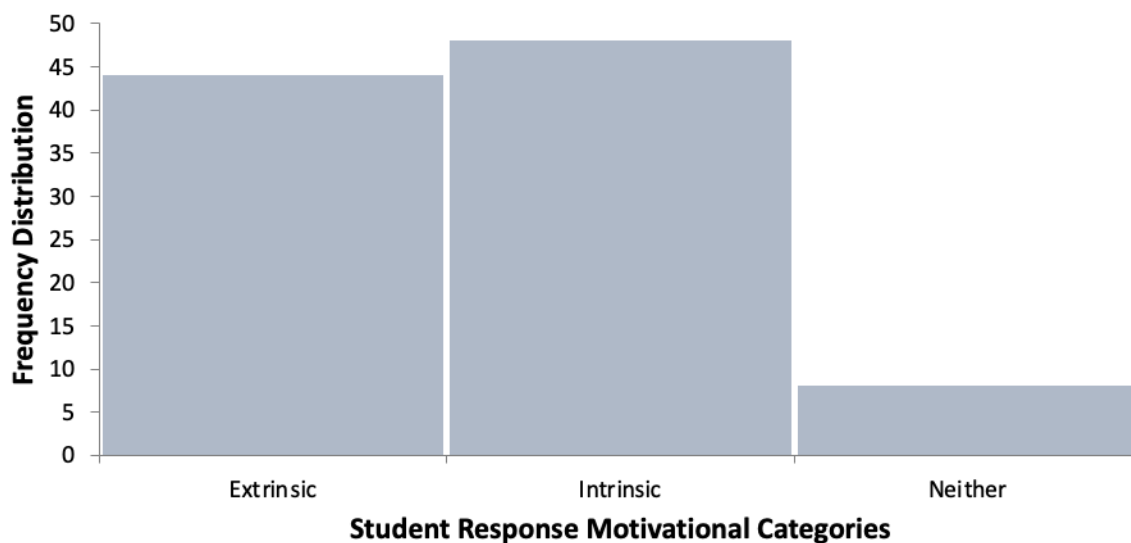
Table 18

Thematic Analysis of Scores from the Second Open-Ended Question from the BPNS-OL

What makes you feel successful learning in your online class?		
Response	Total ($n = 25$)	%
Intrinsic		
It makes me happy	2	8%
I enjoy it	2	8%
I feel I am doing good	4	16%
I feel more confident	2	8%
Learning how to read	1	4%
When I learn something new	1	4%
Extrinsic		
People say I know a lot	2	8%
Teacher tells me I am doing good	4	16%
Parents tell me I am doing good	1	4%
When I get a question right	1	4%
Finishing assignments	1	4%
Good grades	2	8%
I don't know	2	8%

Figure 15

Extrinsic and Intrinsic Factors of Motivation According to Student Responses to the Second Open-Ended Question from the BPNS-OL: What Makes You Feel Successful Learning in Your Online Class?



Out of the four open-ended questions on the survey questionnaires, students (44%) expressed being more extrinsically motivated than intrinsically motivated to learn. However, a more significant majority (48%) expressed more intrinsically motivating factors, indicating feelings of success in learning online (See Figure 15).

Student Interview Analysis and Findings

The interview questions also allowed participants to answer and explain their experiences with online learning according to questions about intrinsic motivation. The questions were based on intrinsically motivated behaviors, allowing students to respond with their perceptions, feelings, and explanations concerning their experiences with motivation while learning online.

Interviews were transcribed via Rev in consideration of time rather than the initially proposed use of MAXQDA for transcriptions. Rev is an online transcription service. Recording

interviews and transcribing the data with Rev allowed rich data collection with verbatim transcriptions, resulting in various detailed results that captured the phenomenon's experience (Becker, 1970). MAXQDA was used for data analysis, revealing themes from interview answers and explaining how they experienced intrinsic motivation while learning online. The qualitative analysis compared the frequency of themes found in students' responses. Themes were created according to word and phrase frequencies relevant to answering the research questions. Themes were also categorized according to the SDT factors of autonomy, competency, and relatedness to show correlational analysis with the SDT-based interview questions.

Students used feelings and adjectives to describe the online learning experience. Student responses were related to SDT factors of motivation, and the interview questions were created to explore topics including autonomy, competency, and relatedness. The three main overarching categories of autonomy, competency, and relatedness are themes. The autonomy category includes the themes of self-motivation, diverse curriculum, choice, and flexible learning, and competency includes the themes of teacher influence, parent influence, recognition, and feedback. The relatedness category includes friends, safety, comfort, and support. Each category and theme illustrated ways students experienced intrinsic motivation while learning online, answering the research question: "How do students describe the experience of intrinsic motivation in online learning?"

Thematic Intrinsically Motivating Influential Factors

Category 1: Autonomy

While learning online, most students expressed their experiences with autonomy by providing examples and explanations. Some students experienced less when discussing their lack of choice between attending school online versus traditional schooling. Student responses were

overwhelmingly expressive of experiencing self-awareness and motivation, contributing to interest in a diverse curriculum, choice, and flexibility with instruction. See Table 19 for specific quotations revealing students' experiences categorized into themes of autonomy.

Theme: Self-Motivation. Students communicated several examples of how they experience motivation while articulating self-awareness. As seen in Table 19, several students expressed intrinsic motivation, describing success with learning as a “feeling” (Participant 8) they get or learning automaticity as “automatic in my head” (Participant 11) learning. Overall positive feelings of success and internal drives for wanting to do their best in school are evident in descriptions of “hard work,” valuing the importance of school, and recognition of the brain as a source of knowledge and understanding. For example, Participant 3 said, “It [studying online] makes me smarter, makes me want to graduate.” Students also expressed self-confidence and high expectations for themselves, using language like “want to be the best” (Participant 22) and “give it my all” (Participant 25). Many students expressed a sense of urgency and excitement to learn more, like Participant 1, who stated, “What I like about it [learning online] is that I can learn stuff that I have never learned before.”

Similarly, Participant 4 stated, “Online, we are going to learn a lot.” Each student expressed value in learning and the importance of school, indicating that they learn more online. They used language like “more technology skills” and “get more knowledge” (Participant 2). Students expressed confidence in themselves, with a keen awareness of self-motivation and a desire to learn with a value for knowledge.

Theme: Diverse Curriculum. The students mentioned various lessons and subjects with enthusiastic responses and general remarks about enjoying what they learned. Different examples of the curriculum the students cited included books on video with recorded narrations, virtual

tours of different places, and new technology skills. Participant 12 stated enjoyment with learning “new things in technology” (Participant 12). Participant 25 stated, “We get to see things virtually,” Participant 11 explained, “Online books sometimes have self-narration, so it adds to the effect.” Participant 11 also commented on videos to “help expand my knowledge on math.” Arts, crafts, and drawing were explicitly mentioned as critical enjoyment sources while learning online, primarily directed drawing. Directed drawing is instructor-guided drawing while students follow each step from start to finish. Students enjoy hands-on class projects designed at home with materials while being instructed online. Students also favored science-based instruction, including planting as well as “historical, social studies, where we learned about new people” (Participant 9), geography, and history projects, including “ancient Egypt” (Participant 19), and reading online plays with student character parts. Math, reading, and writing were all mentioned enthusiastically as favorite subjects enjoyed online.

Theme: Choice. Another recurring theme in the student interview data were choice. Students expressed that their best day learning online was when they could choose their activity. Participant 2 stated, “The best day was choosing the directed drawing.” Another student said, “When I chose to be the art teacher” (Participant 5). Students noted the importance of choice in breakout rooms or with the whole class and working independently or one-on-one. Participant 8 said, “I like that they let me work with somebody at the end of the day.” Another explained:

I could go in the breakout room; I can’t hear anything; I could concentrate better. And if I want to listen to calming music while I do my work, it wouldn’t bother any other students that are in my breakout room because I would just be alone and also because it would be quieter. But sometimes with other kids because I sometimes need help.
(Participant 12)

Students enjoyed the option that a breakout room provided.

The ability to choose to attend school online versus attending a traditional, in-person school was also a source of angst for some students. Most participants preferred to attend school online, but one student did not because attending school online was her parent's choice and not her preference. This student explained that her mother chose for her to attend school online, but she would rather be in her former traditional school where she could be with her "old friends" (Participant 20). She continued by explaining that it was not her choice or preference to attend school, preferring to attend a traditional in-person school. Having control over their choices with the offered options was highly favorable to students. The choice was a source of motivation for online students.

Theme: Flexible Learning. A key motivational factor describing feelings of autonomous learning included flexibility in learning related to time. Students expressed more satisfaction with the schedule and flexibility for work completion than with the alternative of attending in-person schooling. "I remember going in person, and I was just really tired when I got home, and I just didn't get enough time in my day" instead of the convenience online (Participant 11). Other students expressed enjoying the shorter schedule, stating online learning is "short too, so that's what I like" (Participant 8) and "it's a little faster" (Participant 14). Many enjoy the flexible schedule, which allows them more time to do extracurricular activities. Participant 12 stated, "I have time to do my other stuff that I have to do, like go to dance and piano." Another student stated, "What I mostly enjoy about learning online is that it gives me the freedom to continue with my sports activities I do outside of school" (Participant 17). This sense of free will was expressed by another student, who stated, "I am the happiest because I have the freedom to do my work whenever I want" (Participant 19). Time flexibility allows students to make

independent decisions about managing their time, an essential component of expressing autonomy.

Table 19

Thematic Analysis of Interviews: Exploring Students' Experience Learning Online: Autonomy

Category Theme	Selected Student Quotations
Autonomy Self-Motivation	“My strengths are humor because I do actually make people laugh a lot, even myself sometimes. And kindness, because sometimes people are like, “I don’t know about this, what if I can’t do it?” And then I just say, “You can do it.” And I try my best to answer each question if I don’t know in a test.” (Participant 8) “I understood way better than when I used to go in person. And, also, the kids were kinder than last years. And it was cool learning online, and the first day of school I learned a lot of new things in technology and stuff.” (Participant 12) “My strength as a student is to participate stuff that I know. I always try to participate in class math stuff when other kids don’t participate.” (Participant 12) “I know that I’m being successful in class is when I’m working really hard, and I don’t have to second guess myself.” (Participant 17) “My strength is, as a student, is a hard-working student.” (Participant 21) “I’m successful learning it’s my teachers and sometimes it’s just the feeling. (Participant 8) “For me, it’s when I understand something immediately and it’s just in a snap instead of having to think for a while. Yeah, when it’s just automatic in my head, that’s when I know successfully.” (Participant 11) “When I feel confident about whatever we’re doing or after it.” (Participant 13) “My brain tells me all things of class. I did really good at math and ELA. In my mind, I got it.” (Participant 19)

“I like learning online we going to learn a lot.” (Participant 4)

“The thing that makes me try the best is my math. When I have to complete something that’s totally important.”
(Participant 4)

“What I like about it is that I can learn stuff that I have never learned before.” (Participant 1)

“The best day I ever had learning online, is every day when I learn online. I can see my friends and learn.” (Participant 2)

“I think learning online is super great. Then we become smarter and smarter.” (Participant 3)

“Whenever I can get my brain bigger and better, and so I can learn more about how I do things and get my knowledge.”
(Participant 2)

“It makes me smarter, makes me want to graduate.” (Participant 3)
“It makes me happy because Zoom, it’s the world’s bestest ever.”
(Participant 3)

“I feel like I am smart because everyone’s smart in their own way, but I don’t get everything. But I feel like I can really try my best every day here.” (Participant 11)

“I like learning online because it’s fun.” (Participant 16)

“Because it makes me happy, and it makes me study.”
(Participant 16)

“I like to learn better, and more stuff.” (Participant 21)

“I want to be the best.” (Participant 22)

“I enjoy doing the work.” (Participant 23)

“I like just learning new things.” Participant 24)

“I always give it my all and try my hardest for everything I do in class.” (Participant 25)

Diverse Curriculum

“I like so many books that read to me.” (Participant 3)

“I got to draw the statues of people who’ve been the President.”

(Participant 4)

“I enjoy learning online is math and reading because I can learn a lot.” (Participant 5)

“I like most we can draw.” (Participant 6)

“The best thing I learn online is math.” (Participant 7)

“What I enjoy most learning online is doing arts and crafts and drawing.” (Participant 7)

“I think the best day was last year when we grew plants.” (Participant 9)

“It’s very fun to learn, especially in historical social studies, where we learned about new people. Like today, we were just doing a play.” (Participant 9)

“I enjoy math, geography, and writing.” (Participant 10)

“The best day was learning about elephant forest.” (Participant 10)

“The part about reading stories, because stories, if you’re reading an online book, physical books are good too, but I feel like online books sometimes they have self-narration, so it adds really the effect.” (Participant 11)

“I like how you could watch videos anytime online, so it helps expand my knowledge on math, and other stuff like that.” (Participant 11)

“I learned a lot of new things in technology and stuff.” (Participant 12)

“We use more educational games.” (Participant 14)

“It’s fun and I like when we draw.” (Participant 16)

“The best day was drawing.” (Participant 16)

“I like learning online because I like math i-Ready.” (Participant 18)

“The best day was when I made a class project, we had to make Ancient Egypt projects and all of that, and it was really cool.” (Participant 19)

“I like learning the science in the class and I like to do the history projects.” (Participant 19)

“The best day I ever had is Fridays because we can do fun things and fun stuff and fun learning.” (Participant 21)

“The best thing is doing Renaissance.” (Participant 22)

“When I first started math, it was, I thought it was the best.” (Participant 23)

“The best time I’ve ever heard learning online is that we got to see different places on Nearpod for class. Because we get to see places virtual.” (Participant 25)

Choice

“The best day was choosing the directed drawing.” (Participant 2)

“When I chose to be the art teacher and that was my best day.” (Participant 5)

“I could go in a breakout room and can’t hear anything, I could concentrate better. And if I want to listen to calming music while I do my work, it wouldn’t bother any other students that are in my breakout room because I would just be alone. And also, because it would be quieter. But sometimes with other kids because I sometimes need help. (Participant 12)

“I like that they let me work with somebody at the end of the day.” (Participant 8)

Flexible Learning

“What I enjoy most about learning online is the fact that I’m not so exhausted after school. Because sometimes whenever I remember going in-person and I was just really tired when I got home. And when I went to sleep during the day, I just didn’t get enough time in my day. But now that I’m home, I can grab something to eat if I’m hungry. And yeah, that’s what I like about learning online.” (Participant 11)

“And it’s short too, so that’s what I like too.” (Participant 8)

“I have time to do my other stuff that I have to do, like there’s my homework and stuff and go to dance and piano.” (Participant 12)

“I like it’s a little more faster and more funner.” (Participant 14)

“What I mostly enjoy about learning online is just like, it gives me the free will to be able to continue with my sport activities, I do out of school.” (Participant 17)

“I am the happiest because I have the freedom to do my work whenever I want.” (Participant 19)

Category 2: Competency

Whether intrinsically or extrinsically motivated, most students expressed confidence in learning online. The most significant reported influential factors for competency included teachers and parents having a motivational impact on students. Students’ confidence in learning and feelings of success stemmed primarily from parent verbal recognition and teacher feedback. See Table 20 for specific student quoted responses.

Theme: Teacher Influence. The teacher was a significant motivator for students to feel successful and confident, believing they could learn. Respect and admiration for their teacher were often consistent with students’ comments about their academic progress, achievements, and sense of accomplishment. Many stated they learned a lot from their teacher through modeled lessons, words of encouragement, and differentiated instruction. Students stated that modeled instruction was beneficial to them. One student stated, “My teacher showed us some problems in a test, so that made me more comfortable doing it” (Participant 8). Other students had similar thoughts, expressing, “She explains things” (Participant 10) and “She is kind and teaches well; if it’s too hard, she makes it easier” (Participant 12). “She always makes sure she helps me improve” (Participant 9). One student explained the teacher’s lesson presentation as motivational, stating, “How they present it motivates me” (Participant 13). “She helps us out and motivates us to do our best with our work” (Participant 25).

Words of encouragement had a significant impact on students’ self-esteem. Most students

explained that their teacher always encourages them to try their best with expressions such as “try your best,” “keep your brain growing,” “good job,” and “believe in yourself” (Participant 22). The teachers also communicate progression, showing their grades or answers as they complete tasks. “When we’re doing a math test, they show our grades how we’re doing, and I know how I’m doing successfully” (Participant 21). Students feel competent with verbal recognition, such as “good job” or “great job,” while students validate feeling encouraged.

Differentiated instruction contributed to several students’ sense of competence as well. Individualized attention granted equally to all students was an admired attribute, and students responded positively to their learning. Participant 17 explained, “The teachers take their time individually to work with me, and all of my other students,” and “They devote their time to each student, and they always congratulate me when I move up in my score.” The teacher’s influence with encouraging words and personalized instruction with modeled lessons provides students with competency skills and builds motivation.

Theme: Parental Influence. Several students provided examples of acknowledging personal success due to parent validation. Many students attributed their knowledge of learning success and what they believe to be their greatest strength to comments from their parents, such as “My mom said I did a good job” (Participant 5 and Participant 6). Two students stated they were good at subjects because their parents taught them (Participant 7 and Participant 22), attributing their success to their parents’ influence. Parents’ influence was a common factor among the students.

Theme: Feedback. Feedback and recognition from teachers also contributed to students’ feeling competent. When asked how they know if they are learning, many students responded that they know from teacher feedback informing them of academic progress, in-the-moment

feedback during worktime, or recognition for meeting goals. Some students stated that when they review their work with their teacher, checking answers to assignments, they feel “successful” because “every time I make a mistake, I learn from it” (Participant 2). Others felt successful when their teacher checked their answers, corrected them, or reviewed assignments together and stated, “good job” (Participant 3, Participant 4, Participant 5, and Participant 7).

Theme: Academic Performance. Students expressed high competency rates, stating their greatest strengths as students were in their academic achievements. Most students claimed their most significant strengths were math, reading, and writing abilities. Others stated their greatest strengths were more interpersonal skills such as listening, working well with others, and being “good with leadership and cooperation” (Participant 13). Other skills students stated they had success with included dedication and creativity. One student stated, “My strength as a student is that I’m very dedicated” (Participant 17). Another student claimed their greatest strength as a student was that they “like to be creative” and “like to try new things” (Participant 19). The diversity of student meaning associated with personal strength correlates with the diversity of the online curriculum.

Table 20

Thematic Analysis of Interviews Exploring Students Experience Learning Online: Competency

Category	Selected Student Quotations
Theme	
Competency	
Teacher Influence	“I feel about my teacher is good because he was teaching me a lot.” (Participant 5) “Where we’re like in a group, he says, “You guys can do this. And when you can’t do it, I can help you. And he says, You guys can try your best. And I think he really is being kind to me because I can

do it. He's told me I can." (Participant 5)

"What my teacher does when I try my best is when she tells us how about it, how to do it and it's very important. So okay. I can do it." (Participant 7)

"Well, if there's a test they show us one problem, like what is in it. The math test we had; my teacher showed us some problems there are in the test, so that made me more comfortable with doing it." (Participant 8)

"She always makes sure that she helps me improve." (Participant 9)
 "She explains things." (Participant 10)

"They make us try our best by saying sometimes when I feel like, oh, this is so hard. She sometimes reassigns a lesson the next day so you could keep working at it. And then that taught me how to not give up and stuff. And she says, when you say you can't, you say you can't do it yet. The magic word yet." (Participant 11)

"She's kind and she also teaches well. And if it's too hard, she makes it easier." (Participant 12)

"I know when I'm being successful because usually my teacher says so, or I notice it." (Participant 12)

"Well, one thing is that once at first my teacher encourages me to do it, like she says that I'm so close to getting my new goal and that really have to do with that. And it's hard but she makes it look easy by saying that, all you have to do is and she shows me one problem, the she tells me I have to do that in the rest of them, but just with like different problems and stuff." (Participant 12)

"Well, how they present it is pretty good. How they present whatever we're working on, I'd rather see what they do than if they just gave me the work. I think how they present it motivates me." (Participant 13)

"When my teacher tells me, good job." (Participant 15)

"The teachers take their time individually to work with me and all of my other students." (Participant 17)

"They devote their time to each student, and they always congratulate me when I move up in my score." (Participant 17)

"She tells me to keep your brain growing." (Participant 20)

“She tells us we’re doing good.” (Participant 20)

“I know I’m successful because the teacher makes the face.”
(Participant 20)

“I think my teachers, because when we’re doing a math test, they show our grades how we’re doing, and I know how I’m doing successfully because, and I told myself I feel pretty confident, I feel successful.” (Participant 21)

“Once we did a test, and it was my first time doing it and my first time reading the questions, I asked my teacher, can you read this? And she read it to me, and she said, oh you can do this [REDACTED], try just try your best. And I said, okay, I’ll try my best. And that makes me feel happy.” (Participant 21)

“She helps me be a brave risk taker and be confident, and she tells me that I can do this, so she gave me a little notepad that says, believe in yourself.” (Participant 22)

“She says that if you can’t do this, you could just try your best.”
(Participant 22)

“She encourages me.” (Participant 24)

“She’s a very cool teacher because she helps us out and she motivates us to do our best with our work.” (Participant 25)

“Basically, she doesn’t try, she just does, because she tells us to try our best, do whatever we can do, and see what she can help us on.”
(Participant 25)

Parent Influence

“My strengths is math and reading because my mom saw me reading yesterday.” (Participant 20)

“I think I’m good at doing math because my dad teaches me.”
(Participant 22)

“I get help from my mom.” (Participant 7)

“My mom said I did a good job.” (Participant 5)

“My mom telling me, “You’re doing good job.” (Participant 6)

“When my mom’s like, you’re doing great.” (Participant 7)

Feedback

“I’ve been told by a lot of people that I’m the best reader that they know.” (Participant 9)

“I would tell the teacher if I got it right, or I just know that when I’m making mistakes, I’m learning from it. So, I know that I’m being successful whenever I’m making mistakes.” (Participant 2)

“Because my teacher, she talks saying how good I am.”
(Participant 3)

“When the teacher comes online saying, good job.” (Participant 4)

“My teacher said I did a good job.” (Participant 5)

“My teacher says great job.” (Participant 7)

“Because we tell the teacher if she can see our work and tell us if we did it correct, and she would always tell us.” (Participant 25)

Academic Performance “I’m starting to get the stuff I didn’t know before.” (Participant 6)

“I’m doing good.” (Participant 4)

“I feel really good at doing my math and listening.”
(Participant 4)

“My strength is math and reading.” (Participant 5)

“My strength is reading and drawing.” (Participant 6)

“My strengths as the student is math and reading.” (Participant 7)

“Math is one of my biggest strengths, also writing.”
(Participant 11)

“I’m good with leadership and cooperation.” (Participant 13)

“I like working in groups. I think I’m good in that and working with the new students.” (Participant 14)

“My strength is reading, because before I was like, I couldn’t read words, but I got very stronger.” (Participant 2)

“My strengths as a student is that I’m very dedicated.”
(Participant 17)

“I like to be creative, and I like to try new things.”
(Participant 19)

“My strengths as a student is for math because I got the hang of
math really quickly.” (Participant 25)

Category 3: Relatedness

The relatedness category was prevalent among the themes discovered from students' experiences learning online, including friends, safety, comfort, and support (See Table 21). Students expressed satisfaction with the relationships they have with their classmates. In addition, they described the online learning environment as safe and comfortable, different from what some had experienced in traditional classrooms. Regarding relatedness, students also felt support and acceptance for who they are as individuals.

Theme: Friends. The most prevalent theme in the study was friends. All 25 participants mentioned friends during their interviews. Several students mentioned enjoying partner work and making friends in class. Students expressed that they could turn to peers for help with assignments and feel those fellow students are kind. One student's statement exemplifies several similar ones: “I like my classmates because they are very kind to me” (Participant 5). Other students said becoming familiar with others in the class was easy. One student stated, “I made friends, and it was easy to get comfortable with them” (Participant 19). Another student enjoyed working with others “to share ideas and learn from each other” (Participant 21). Overall, friends significantly impacted student enjoyment of online learning because they provided comfort in relating to others.

Theme: Safety. Most students shared that they experienced a sense of safety learning from home in their online classes. Students expressed comfort with learning from home and the convenience of having their items and family with them and being able to eat when they wished.

Others explained comfort with safety and relief from not experiencing bullying or witnessing class disruptions from other students' misbehaving, as they recalled from their past learning in traditional schools. "It kind of relieves stress off my shoulders more than in-person school, when I was always getting bullied, fighting in the classroom, and stuff like that," one student said (Participant 9). Another student expressed similar feelings, stating, "What makes me happiest about learning online is that I get to be in my own space, and I just get to be me without getting bullied" (Participant 17). Feelings of acceptance and freedom from negative classroom behaviors were prevalent themes in student discussions. Another student expressed relief with online learning, stating, "No one says mean things to me, and they don't hurt me like my other school, and everyone's really friendly here too" (Participant 25). The sense of safety motivated students to enjoy online learning and contributed to many students' sense of comfort.

Theme: Comfort. Besides safety, most students expressed feeling comfortable learning online. Comfort with other students and teachers online was mentioned several times in the interviews. Students also appreciated the convenience of working from home. A student expressed being near their family by stating, "I'm in class, but I'm happy I'm still with my family here" (Participant 15). Students expressed a sense of ease and simplicity about attending school virtually from home. One student stated, "I feel like it's easier because I don't really have to go anywhere" (Participant 13). Another student commented on the comfort of learning at home, stating, "I enjoy that we're at home and stuff and don't have to wear masks all day" (Participant 8). Zoom breakout rooms also provided comfort and privacy for some students' interactions with peers and teachers. Participant 11 explained:

Whenever I get in breakout rooms with a lot of people, I'm just really excited because it's like, sometimes you don't feel like you have enough privacy when you're talking in

person because the teacher is walking around, and then you have privacy there. But I like how the teacher also pops into your breakout rooms just to check on you.

Students feel comfortable learning in the online environment.

Theme: Support. All students felt supported in their online classes by teachers and peers, while some expressed additional support from parents or siblings at home. Students expressed receiving academic support from their teachers, and some recalled getting more instructional assistance online than through in-person learning. Compared to her former experience learning in traditional classrooms, a student stated, “What I enjoy about learning online is that I can get more help from the teacher” (Participant 25). Another student remarked, “The teacher always has time for me, and always when I need help, she helps me” (Participant 12). Taking time to individually help students was commonly mentioned as a positive factor for students enjoying online school. “If I don’t understand something, they’ll try to give me time to help me out” (Participant 19). Two other students explained that their teachers are understanding and that “they’re both really flexible” (Participant 13) and “they help me with things that I don’t understand” (Participant 8). Students felt supported overall by their online teachers’ time and academic assistance.

Table 21

Thematic Analysis of Interviews: Exploring Students Experience Learning Online: Relatedness

Category	Selected Student Quotations
<i>Theme</i>	
Relatedness	
<i>Friends</i>	“I started to meet new friends.” (Participant 3)
	“It makes me happy learning in Zoom because it’s a lot of stuff to do in Zoom and it’s fun because you do stuff online and it’s fun because you

can play games with your teacher or classmates.” (Participant 5)

“I enjoy partner work and making new friends.” (Participant 8)

“So part I like learning online is get to know my friends.”
(Participant 21)

“Having fun with my friends, but also learning stuff.” (Participant 22)

“I feel great with my classmates.” (Participant 7)

“I enjoy partner work and making new friends.” (Participant 8)

“I think I like my classmates because they’re very kind to me.”
(Participant 5)

“The teachers are kind and they’re all good friends and stuff. And also that they help me, and I help them.” (Participant 12)

“I like my classmates because they work together.” (Participant 15)

“The first day was the best because I got to be with other kids.”
(Participant 15)

“I have a really good relationship with my classmates. I have friends in my class. I’m very grateful for my friends and they were very welcoming when I first met them. When we went on our field trip, they were like, okay, so this is me, and do you want to sit with me on the bus? And it was really welcoming, and I just felt very comfortable and welcomed by all of them.” (Participant 17)

“I made friends, and it was kind of easy to get comfortable with them.”
(Participant 19)

“I can make more friends and I can get to know each other, what they like about yourselves. The best day was just talking to friends.”
(Participant 20)

“And we can just share our ideas or be partner work and we can learn new stuff each other.” (Participant 21)

“And also I really like that they interact with me instead of just staying silent in a breakout room. And also I don’t like working independently.
I like talking with somebody while I work, working together too.”
(Participant 8)

“Well, they’re all great, because [redacted] and [redacted] and [redacted] are all my friends and stuff, and they’re all really nice.” (Participant 13)

“I feel good when I’m with my friends.” (Participant 22)

“They’re really cool friends.” (Participant 25)

Safety

“Honestly, I think it kind of just relieves stress off my shoulders than in person school. Back when I was usually doing in person school I was always getting bullied on the bus. There are always fights going on in the classroom, stuff like that.” (Participant 9)

“I don’t get bothered and I can be more myself, because in person, I get more judged than when I get online.” (Participant 14)

“What makes me happiest about learning online is I get to be in my own space and I just get to be me, without getting bullied.” (Participant 17)

“No one says mean things to me and they don’t hurt me like my other school. And everyone’s really friendly here too.” (Participant 25)

Comfort

“Well, I feel like it’s easier, because I don’t really have to go anywhere. And it’s just easier, because in the class I would get in trouble more for talking, but in person, I mean, virtual, it doesn’t really have that problem.” (Participant 13)

“Whenever I get in breakout rooms with a lot of people, I’m just really excited because it’s like, sometimes you don’t feel like, well, have enough privacy when you’re talking in-person because the teacher is walking around and then you have privacy there. But I like how the teacher also pops into your breakout rooms just to check on you.” (Participant 11)

“I’m in class, but I’m happy I’m still with my family here.” (Participant 15)

“I enjoy that we’re at home and stuff and we don’t have to wear mask all day.” (Participant 8)

Support

“What I enjoy most about learning online is that I can get more help from the teacher easier.” (Participant 25)

“They help me with things that I don’t understand. And also, well some homework they give me that’s easy and hard, and some of them are very fun.” (Participant 8)

“I appreciate about is that it’s because my teacher also has time for me,
and always when I need help she helps me.” (Participant 12)

“I like both of my teachers, because they’re really nice, and they understand when sometimes you don’t get something done. They understand, and they let you make it up, and they’re both really flexible.” (Participant 13)

“They take the time to work with me individually. And it helped me shoot up my grade from almost a 3.0 to a 4.0. So, I was really happy about that. And they take their time individually to work with me and all of the other students.” (Participant 17)

“I feel happy with my teacher.” (Participant 7)

“I like her a lot.” (Participant 4)

“I feel that she’s a good teacher.” (Participant 4)

“I really like them because also, I mean they’re very good. They help me with things that I don’t understand.” (Participant 8)

“I like how my teacher loves it. She is funny and she also brings humor into the lessons, even if it’s complicated.” (Participant 11)

“The teacher explains things well and she makes time for everyone else separately.” (Participant 11)

“I really enjoy having classes with Miss [REDACTED]. She’s really fun.” (Participant 14)

“My teachers are really nice and yeah, they help me a lot, and if I don’t understand something, they’ll try to give me time to help me out.” (Participant 19)

Most interviewees expressed positive feelings and experiences learning online, while a small minority of students experienced less intrinsic motivation and did not favor online learning over traditional school. According to qualitative data, most students indicating intrinsic

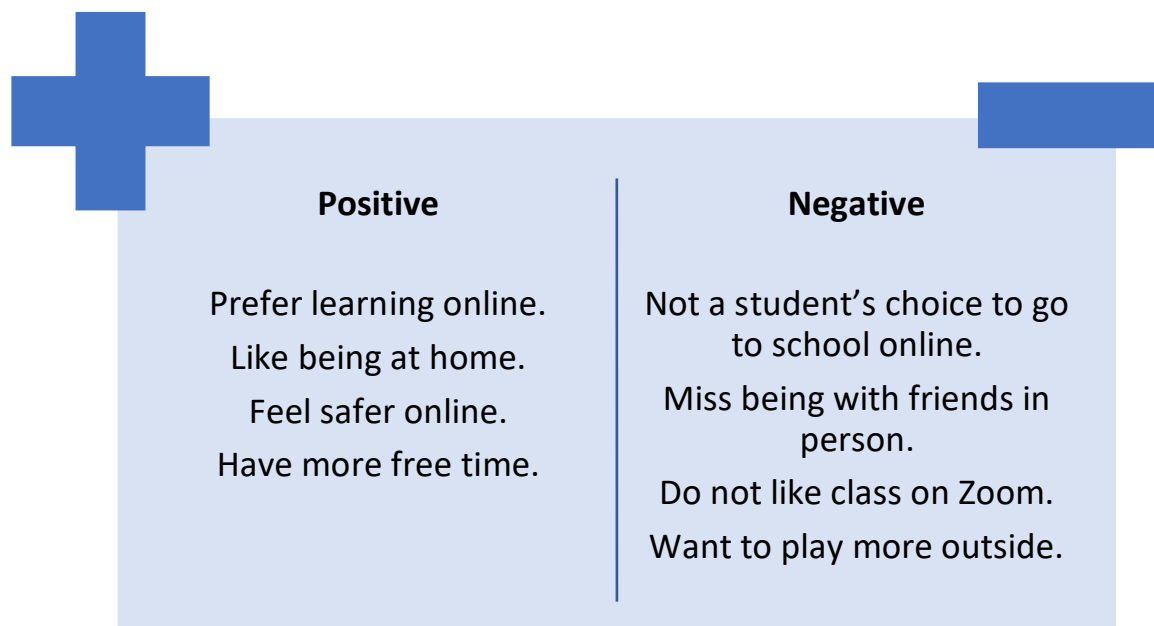
motivation while learning online was 92%. Eight percent of the students expressed motivation to learn but negative feelings towards not having the choice to attend their preferred learning mode in the traditional classroom.

Nonmotivational Factors of Online Learning

While the research study's objective was to explore student experience with intrinsic motivation, including positive factors of intrinsic motivation, the data collection also included negative non-motivational experiences for some student participants learning online. The negative factors included seclusion from friends and an apparent unfulfilled need to be in person with friends and attend a traditional school. These are the same students who did not feel it was their choice to attend an online school, nor was it their preference.

Figure 16

Interview Response: Positive and Negative Thematic Comparisons



Interview Color Symbol Image (CSI) Artifact Task Results

The artifact task was completed by 100% of the participants ($n = 25$). Students completed the CSI task using the materials they picked up in the interview bag created by the researcher. 92% of participants picked up the interview bag and had it to use during the Zoom interviews, while 8% did not pick up the materials. The students who did not have the interview bag were instructed to gather writing instruments for coloring while they also uploaded the CSI template from a link the researcher uploaded in the Zoom chat. One of these students printed the template, and another filled it out electronically on their iPad. The other 92% of students held up their CSI template in front of the camera and shared it during the Zoom interview while verbalizing the details and explanation for each category. The categories included a color, symbol, and image students think of when they recall how they feel about online learning.

Along with each category is a writing area for written explanations. As seen in Table 22, the students' choices and descriptions varied with some similarities. Similarities were further analyzed, looking for correlations between the data that further described how students feel about learning online.

Table 22

Interview Color Symbol Image (CSI) Artifact Student Responses

	Color	Description	Symbol	Description	Image	Description
P1	red	I like this color.	happy face	I like to learn online.	numbers	I like math.
P2	green	Green means happy and it helps me express my feelings.	happy face	School makes me happy.	tree, grass	It's because of peace.
P3	yellow	It means happy	heart	So excited	people	This is me

		because I like when I am in Zoom.		because my friends are there to chat with.		chatting with my friends.
P4	blue	I like the color blue and reminds me of my great class.	square	That's my favorite shape.	tree	I like trees.
P5	green	It's the picture of Zoom.	waterfall	It's in nature.	waterfall, plants	Zoom makes me feel like that and Zoom has lots of colors with sharing the screen It makes me feel happy.
P6	green	I love the School. I love Zoom.	person, computer	I put me in Zoom.	tree	I love the nature.
P7	blue	My favorite color. It's a very relaxing color.	water	A lot of people go swimming there and it's very relaxing. Very fun.	waterfall	Very colorful and relaxing water.
P8	purple	It's my favortie color. I just like dark purple.	straight mouth on face	Some things are great about Zoom. Some things are not great about Zoom.	dog	Dogs make me super over- excited and super over- happy.
P9	orange	It's just the first one I think of.	Internet logo	Learning on the Internet.	satellite dish	I'm 85% sure that satellite dish is what uses the Internet that sends down the Internet to everybody.

P10	yellow	Sometimes I don't want to go to school but I know I have to learn.	happy face	It's good learning stuff to tell it to others.	two people talking	They want to know about online learning.
P11	yellow	I chose this color because to me yellow means happiness.	peace	I feel calm at this school school. I feel calm because everyone is so nice.	happy face	This is how I feel about this school. Because I always come into class with a smile.
P12	green and yellow	I am happy that I am at this school. I also chose yellow to show I'm excited.	pencil, heart, plus, and minus	I love to dance and sketch.	rabbit, flower, numbers	I love to learn math. Flowers and my rabbit helps me concentrate.
P13	green	It's overall a happy color and I'm happy when I'm learning online.	camera	To symbolize a video or virtual.	3D question mark	Because I never know what I'm going to learn next.
P14	purple	At the same time dark and boring but a little bit interesting.	peace	I feel relaxed while learning online because I can be in my own room instead of being in a room full of students around me.	boxes with faces on a computer screen	I enjoy seeing my classmates faces and also a lot of my classmates have really creative backgrounds so, I really like seeing them.
P15	yellow	One day my teacher said her favorite color is yellow.	sun	Because I like the sun.	waterfall	Because without water we can't live.

P16	pink	That's my favorite color.	happy face	It makes me happy in class.	book	Because reading is fun.
.						
P17	yellow	Because it makes me happy.	heart	We are loving.	6 stick figures	We are all kind and caring.
.						
P18	green	It's my favorite color.	computer	Because some computers are easy and some are hard.	stick figure with school logo	Way like.
.						
P19	bluish purple	It's the color of the sky and it tells me to keep going.	rocket, paint, paintbrush	To show that I can be creative.	potion bottle	I want to be a scientist in the future so I have to work hard to be that.
.						
P20	dark red, light orange, dark orange	It's kind of like the sun down	surprise face	If I get to third grade I get to go in person. I am so surprised.	red	lipstick
.						
P21	blue	I chose this color because it is my favorite color and I like to look at the sky.	smile face	I like to be happy and kind to others	classroom, student smiling math problem on a computer	I like being on online school because I don't need to walk to school.
.						
P22	hot pink	It looks like the sunset.	circle	I chose a circle because I'm happy.	two people	Me and my teacher together because it's me doing my work.
.						
P23	rainbow	I like every single color.	smile face	Because I like Zoom.	water	Because you can't survive without water.

P24	black	Plain but the color is used in different ways.	peace	When I am in class I feel peaceful.	football field	I want to be a football player.
P25	blue	I chose blue because it makes me happy.	smile face	Because it reminds me how I laugh when there is a joke.	person, school building	I made this picture because it is my favorite school.

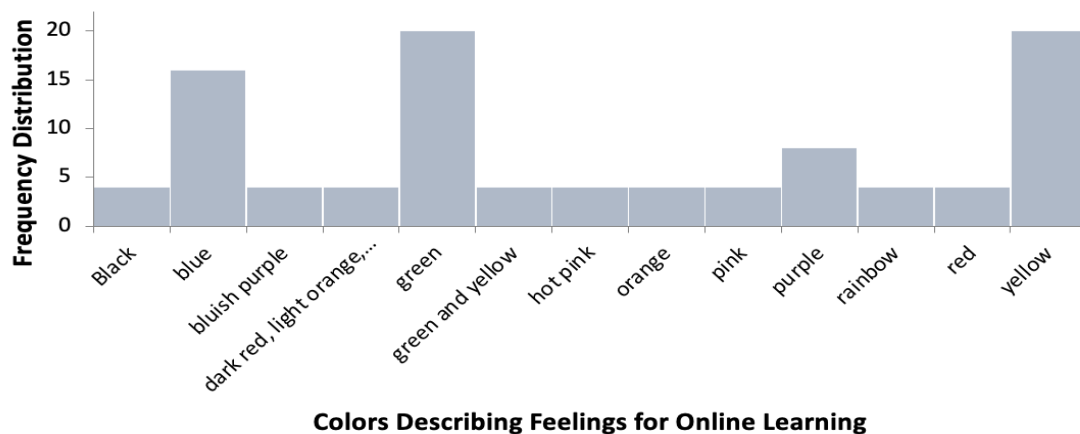
Note. Descriptions are recorded as students stated them verbally for clarification, minus the spelling and punctuation errors in the student-written versions.

CSI Artifact Results and Analysis

Frequencies were factored into percentages according to similarities and differences in artifact responses seeking patterns or themes. The most significant similarities were with colors and symbols. See Figure 17 for percentages, and types of colors students chose to describe how they felt about online learning factor analysis of data. Green (20%) and yellow (20%) were the most common colors chosen, followed by blue (16%) and purple (8%). Student explanations for color choices are presented in Table 22. Students associated most colors with positive feelings, such as yellow and green, for happiness.

Figure 17

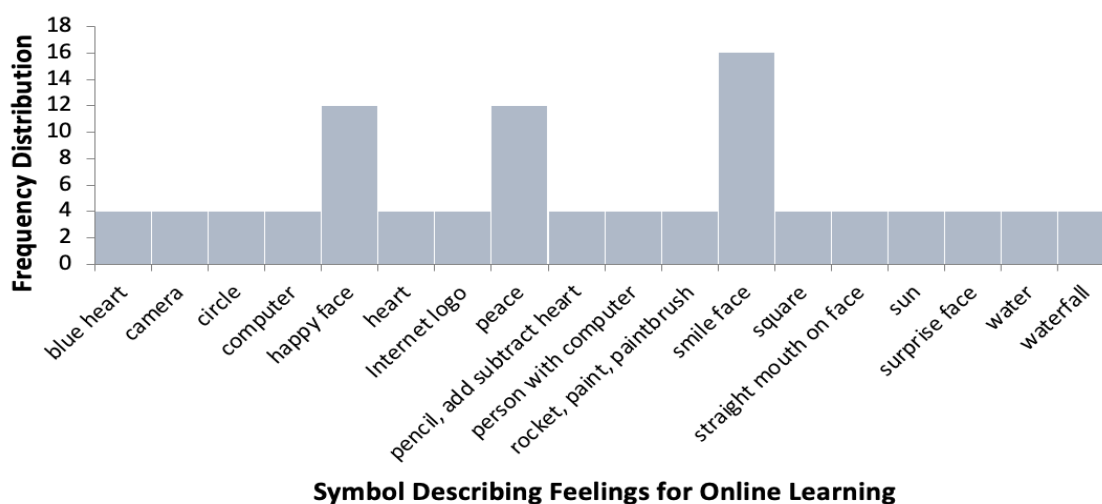
Colors Chosen to Describe How Students Feel About Online Learning



The symbols students chose to express their feelings about online learning varied, as seen in Figure 18. Smiles, happy faces, and peace were students' most frequently chosen symbols. Twenty-eight percent of students chose smiles and happy faces and 12% chose a peace symbol. Students explained the symbols with meanings of happiness, relaxation, and feelings of peace while learning online.

Figure 18

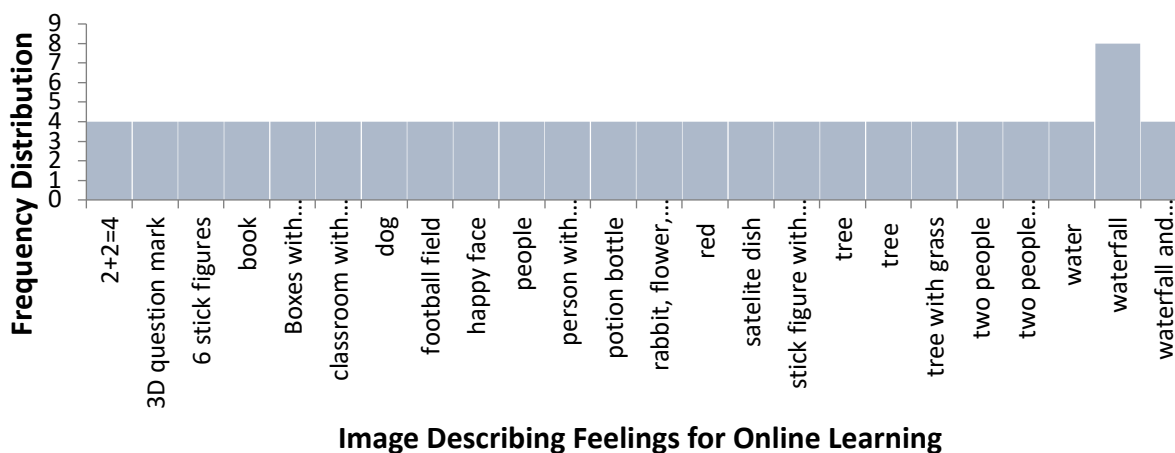
Symbols Chosen to Describe How Students Feel About Online Learning



Except for four students, who drew water-related images such as waterfalls (8%) and water with plants in nature (4%), the images students chose varied with each response. As seen in Figure 19, images describing students' feelings about online learning included people, computers, trees, and numbers. Students' written descriptions of their images were about liking school, enjoying classmates, and representing future goals. Each image description was associated with positive feelings.

Figure 19

Images Chosen to Describe How Students Feel About Online Learning



The CSI artifact task was a valuable instrument that children participated in willingly and with engagement. The artifact provided additional explanations for students' feelings and experienced learning online. Most students associated online learning with positive feelings and images through descriptions, with a few negative responses. The negative responses were from the same two students (8%) who expressed in their interviews that they had no choice in determining whether to attend online learning. These students explained that it was their parents' or guardians' choice for them to attend online. Lack of choice was attributed to their unhappiness with learning online. While a few students wished they were attending school in person, these

same students still expressed contentment with their learning and activities in their online classes.

Student-Preferred Activities and Learning Strategies

During the interviews, students also expressed learning strategies and activity preferences they experienced during online learning. As seen in Table 23, the favored instructional strategies students liked the most included choices for assignments and options for collaborative work. Students also recognized modeled lessons with explicit instruction as effective learning methods. Flexibility with time for turning in assignments was also preferred, as were reward systems.

Table 23

Participant Interview Response: Motivational Strategies and Activities

Strategies and Activities That Encourage Student Motivation to Learn Online	
Strategies	Choice for assignments Collaborative learning Working in breakout rooms alone or with partners Time management options for completion of work Point reward system Partner work Teacher modeling instruction
Online Activities	Directed drawing Arts and Crafts Collaborative reading Planting Scavenger hunts Virtual field trips Hand-on Projects
Educational Resources	Kahoot Book It Renaissance Reading Mystery Science Nearpod Formative Story Arc Templates

Activity preferences varied from arts, crafts, and directed drawing to more technologically related tasks such as virtual field trips and online scavenger hunts. Preferred activities were often mentioned as being favorable using online educational resources. Educational resources included online story arc templates that assisted students in planning and organizing their writing. Students also liked the interactive lessons available in Nearpod, an online learning system with instructional lessons, videos, and games. Kahoot is another motivational, game-based online learning tool that students preferred. Motivational reading resources such as Book It and Renaissance were favored learning tools. Book It and Renaissance are motivational reading programs that offer libraries of e-books, as well as points earned for comprehension quizzes based on books read.

While students expressed preferences for learning tools, most academic subjects were enjoyed by all participants. These subjects included math, reading, writing, social studies, science, technology, and art. Students revealed variations in their preferred learning strategies, and each validated that they enjoyed their learning.

Summary

This chapter presented quantitative and qualitative analysis and findings from the study, which sought to learn how students experience intrinsic motivation while learning online. The study revealed a synthesis of meaning from students, demonstrating how online learners experience intrinsic motivation. See Figure 20 for a visual representation of the participants most frequently used adjectives to describe their experience with intrinsic motivation and online learning. The adjectives encompass the most frequently used descriptive words describing the students' experiences. Qualitative and quantitative data results and descriptive analysis of findings completed the study's purpose of answering how students experience and describe

intrinsic motivation in online learning and revealing what motivates them.

Figure 20

Most Frequently Used Adjectives to Describe Intrinsic Motivation & Learning Online



Note. Adjectives were collected from a summary of word frequencies from all qualitative data collections, including open-ended questions from the OLIMI and BPNS, interview responses, and artifact explanations.

Quantitative study findings also attempted to answer how the experience of intrinsic motivation relates to student academic performance. The results of the quantitative data analysis were not statistically significant. However, the quantitative data contributed to the relevance of examining areas in which students were more intrinsically motivated in online learning. The significance of the study's findings beyond the summative analysis presented previously is discussed in the following chapter.

CHAPTER 5: DISCUSSION

Summary of the Study

The mixed-methods phenomenological study that explored elementary students' experience with intrinsic motivation learning online revealed twelve themes classified into the three categories of SDT: autonomy, competency, and relatedness (Figure 21). The significant overarching themes revealed by students' perspectives were correlated with SDT factors of intrinsic motivation and revealed that students did experience intrinsic motivation while learning online. Student experiences illustrated that when their needs for autonomy, competency, and relatedness are encouraged and supported, students internalize feelings of wanting to learn while enjoying the learning process.

Students experienced intrinsic motivation while being encouraged by parents, teachers, and peers through positive interactions and encouraging feedback. Encouraging feedback included parental verbal praise, the teachers' positive feedback during Zoom lessons, and peer comments while working collaboratively in breakout rooms. All students reported positive interactions with peers, and teachers were essential sources of happiness and confidence in their learning abilities and academic achievements. As research claimed, the more connected students felt to others in the class, the more competency they expressed (Ryan et al., 2005). Students expressed competency in their learning achievements gained from teachers', parents', and peers' verbal and academic support.

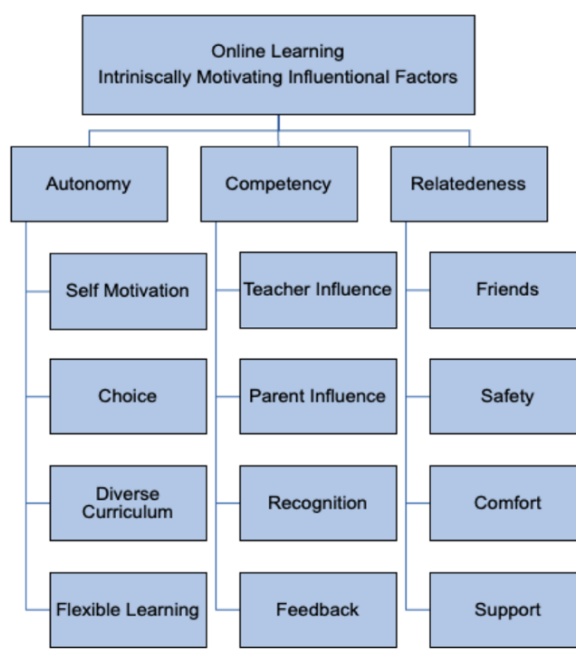
Online learning offered students a unique learning environment that was safer and less distracting than traditional classroom settings. Learning online from home allowed for a safe and comfortable school setting, increasing students' sense of acceptance and relatedness in class. Within the online classroom, students were provided flexible learning with differentiated lessons,

variations in the curriculum, individualized instruction, and alternative time management schedules. As current research claims, diversity in subjects and variations in activities with student learning options contributed to students' explanations for high engagement and enthusiasm for their learning (Palmer, 2017). The online learning environment provided students with an individualized instructional program encouraging autonomy, described by students as enjoyable, fun, and motivational.

As evidenced in survey questionnaire results, interviews, and within the artifact task, all student participants experienced intrinsic motivation while learning online. Experiences with intrinsic motivation were correlated with factors of SDT theory as each student validated internalized motivation stemming from their needs for autonomy, competency, and relatedness in the online classroom.

Figure 21

Intrinsically Motivational Factors Students Experienced While Learning Online



Implications for Practice

The findings in this study contribute to a current gap in the research regarding evaluating elementary students' intrinsic motivation while receiving online education. Evidence from the study results indicated, as reported in previous studies with students in traditional classrooms that students are intrinsically motivated and more engaged in their learning when they are provided with a classroom that promotes autonomy, competence, and relatedness (Baranik et al., 2017; Deci & Ryan, 1985; Niemiec & Ryan, 2009). Online educators and traditional classroom teachers should expand their awareness of the importance of providing an intrinsically motivating classroom environment with instructional methods and strategies encouraging and nurturing autonomy, competence, and relatedness (Gottfried, 2001). Intrinsically motivating instruction includes incorporating influential factors, as seen in Figure 21. Diverse curriculum, flexible instruction, positive recognition, and a safe, supportive learning environment provide the foundation students need to be motivated and internalize the importance of personal education (Kursurkar et al., 2011; Orsini et al., 2015; Salikhova et al., 2020; You et al., 2015).

To increase engagement and relevancy of academic topics, online teachers should validate and encourage students' interests and learning preferences (Charteris et al., 2016). Online teachers should provide a variety of instructional strategies and online resources to meet the needs of learners accessing classroom materials from the Internet (Fabrizz et al., 2021; Krammer et al., 2020). Students enjoy more variations in learning mediums with easier digital access to learning virtually. Learning mediums preferred were video lessons and hands-on projects. Online students have greater access to resources on the Internet than traditional classroom students, and they have more time allotted during asynchronous learning time to engage in assignments (Evans & Boucher, 2015). Students need direction and resources to utilize

this time effectively, promoting engaging and pertinent learning.

Variations in learning methods for Internet instruction also indicate a need for additional features to increase ways for students to communicate in the online classroom. Since autonomy and relatedness are essential factors for students to feel motivated to learn online, students would benefit from more ways to interact synchronously with added Zoom features and more asynchronous communication options. Beneficial Zoom possibilities include nonverbal communication methods with animated avatars representing each participant in the class. Avatars would allow students to communicate digitally in the classroom with more personality represented in their figures while maintaining nonverbal options to speak to each other. Online classroom management systems should allow more student-to-student communication during asynchronous class time. Students can communicate on learning systems such as Google Classroom with the entire class. However, they cannot address a single student, which increases trust and relatedness often missed in online learning. With necessary safeguards to maintain safety, new resources are needed to increase opportunities for students to communicate more in the online classroom.

Teacher influence on how students feel about themselves also should be considered and taken seriously by all educators because they are an intricate component of students' development for motivation to learn. Students in the study relied heavily on their teacher's recognition and reinforcement for gauging personal capability and feeling motivated to learn. Teachers were critical in encouraging students to learn with verbal feedback and providing one-on-one attention and instruction. Students reported that teachers consistently used motivational phrases and positive recognition encouraging endurance with academic struggles. These results indicated the need for increasing student and teacher communication. To completely take

advantage of ways to motivate students with words, teachers need more opportunities to communicate with students online during class and after school hours. Just as there is a need for more resources for student communication, additional resources are needed for teachers to respond to students and increase opportunities for feedback.

During all forms of communication in online learning, teachers should maintain awareness of students' self-perceptions. How students feel about themselves impacts their competence and feelings of importance in class, regardless of their academic performance (Bandura, 1977; Covington, 2000; Gottfried, 1983; Stipek, 1996). They may perform well academically but must be happier and more satisfied with their class or school. There is also a need to maintain awareness of the opposite situation: an academically underperforming student may be intrinsically motivated and enjoy their schooling but show low academic scores. Teachers should ensure they check in with students regularly to gauge self-esteem and make sure students have access to what they need in the online classroom, whether it be instructional support or variations in assignments, working independently or collaboratively (Deci & Ryan, 2000a; Evans & Boucher, 2015; Kelleher & Whitman, 2018; Wijsman et al., 2019). Students need encouragement, ongoing support, and the option to work independently or with others.

Educators can learn from this study that a classroom supportive of individuality that encourages self-awareness and competency with options for collaborative and individualized learning promotes intrinsic motivation that encourages student willingness to learn (PourAli et al., 2017; Siddiqui et al., 2020; You et al., 2015). The study results are relevant for online and traditional classrooms. Educators need to provide individual attention with valuable feedback to students, which provokes student motivation to learn to know they are capable and that someone believes in them (Deci & Ryan, 1985; Froiland & Oros, 2014; Gillies, 2008; Liu et al., 2020). An

SDT-based learning environment is possible virtually or in person by providing personalized attention to students to encourage self-esteem and motivate them to learn.

Additionally, parents should allow more involvement in the decision-making process for school enrollment choices, even in early education. Students learning motivation increases when they make choices impacting their education (Evans & Boucher, 2015; Kelleher & Whitman, 2018; Wijsman et al., 2019). Elementary students expressed positive feelings when explaining that they played a part in the decision to attend an online school. Those who had no choice portrayed themselves negatively and expressed sadness at having to attend school. Even if the child cannot have a say in the decision, parents should include children by explaining their reasoning for choosing a particular school. Students who understood why they were attending their school felt a greater sense of purpose and relevance to their learning, even as they accepted the new online mode and embraced it with fewer reservations.

Teachers should also encourage students to think about motivation and teach them what it is. How do we expect students to internalize something they have never heard of or learned? Teachers need to consider examining if students' psychological needs are being met according to SDT factors of motivation, and if not, find out why or how they will meet these needs (Deci et al., 1981; Niemiec & Ryan, 2009). An intrinsic motivational inventory survey helps gain awareness of students' capacity to acknowledge their motivation for learning and ensure their feelings and needs are met.

To ensure progression with successful online learning, teachers should incorporate the instruction recommended by SDT theory to enhance learning and increase student engagement and motivation to provide the most effective instruction in the online classroom (Thomas & Mueller, 2017). Recommendations include strategies for nurturing autonomy with instructional

student choices and incorporating relevancy for learning (Niemic & Ryan, 2009). Incorporating motivational strategies that meet students' needs for autonomy, competence, and relatedness encourages students to internalize motivation to learn and therefore increase their engagement.

Recommendations for Further Research

Online learning will continue to be explored while educators seek instructional methods and strategies for creating the most effective learning environment. Researchers can support the need for improving online education by designing a longitudinal study observing the incorporation of SDT-based strategies in an online classroom and the method's impact on online learners' intrinsic motivation and academic progression. The study may also use multiple sources for measuring academic performance rates.

In addition, a longitudinal study is needed, exploring intrinsic motivation and online learning with a vast population of elementary students from multiple online learning schools. This study may also examine elementary-aged students and their ability to develop self-regulatory behaviors necessary for online learning to complete asynchronous work. Research may explore the ages at which students are identified as displaying evidence of self-regulatory behaviors in any educational setting and online. Other factors for this study include examining the capacity to develop self-regulatory behavior considering age, grade level, and the maturity of brain development.

Another recommended study examines parent influence on elementary students' learning online. A study is needed to research parent influence on intrinsic and extrinsic motivation because parents may significantly impact being at home while the child is learning online. Online learning students are often learning synchronously and asynchronously while a parent or guardian is at home with them. A study may examine parents' impact on students' intrinsic

motivation to learn and their influence on their autonomy and competency.

Additional study recommendations include researching whether Zoom communication options influence online students' comfort levels and communication skills. The study could examine if emoji responses increase younger elementary students' communication in the online learning environment. The study may determine if Zoom communication tools such as emoji reactions, chat features, and breakout room options impact students' comfort levels by providing different communication options.

There is also a need to investigate student reductions in disruptive or harmful classroom behaviors in online versus in-person schooling. Several students in the present study mentioned being bullied in their former traditional schooling, which led to relief when they attended school online, free from these issues. A study is needed to examine whether discipline problems and bullying are reduced in online versus in-person classrooms. Additionally, using this study's positive results suggests methods to improve student behavior in traditional classrooms.

Limitations

The study had some limitations, as mentioned briefly in Chapters 1 and 3. Limitations included convenience sampling with a limited number of participants. Although 25 participants were considered adequate for a phenomenological study, more participants would have provided more excellent reliability. The study sample of 25 student participants was limited to enhance reliability and validity.

Another limitation was collecting data from minors enrolled in one school in a single district. The school district only had one online school containing relevant factors for this study, so the sample population was limited to the experiences from a single school site. Collecting data from minors was necessary for the study, but it also caused limitations in access to data

collection with more participants. The process of gaining parental and guardian consent and student consent from an online school, relying primarily on electronic communication, made the process of gaining participants and their consent timely. The study's timeframe made it impossible to continue seeking additional volunteer participants as planned.

The study's timeframe to complete the study in adherence to the researcher's doctoral program caused additional limitations. There needed to be more academic assessment data. By conducting the study over a more extended period, the opportunity to study additional academic areas of growth for more informational data to measure relationships over an entire school year rather than just participants' mid-year growth assessment growth rates is provided.

An additional limitation was during the administration of the survey questionnaire, regarding the word 'competent' in question 26 of the OLIMI, the researcher provided some students needing clarification with verbal assistance. The researcher clarified the word with the synonyms 'skilled' and 'good at.' The researcher kept the original word 'competent' while adding the words for clarification to maintain accuracy with the original questionnaire, which was also done in the actual study.

Delimitations

Delimitations included sampling techniques. The researcher chose to use one school for data collection, with only participants showing significant signs of having experience with intrinsic motivation learning online. Access to more students at higher grade levels could expand the sample population. While having access to request volunteers from middle school participants attending the online school, the researcher purposely focused only on elementary students considering the lack of this age group represented in current online learning research.

Another limitation was that the researcher purposefully chose to focus on intrinsically

motivating factors in the learning experience of online elementary students. The study's purpose was fulfilled by focusing specifically on the motivational factors of intrinsic motivation and how students experience intrinsic motivation. The study did include negative motivation factors reported by students in the analysis of the findings, but it was not a primary focus of the study.

Conclusions

There were specific ways that elementary students experienced intrinsic motivation while learning online. The ways students described their experience with intrinsic motivation in the online classroom exemplified the SDT factors of autonomy, competence, and relatedness. Research has shown that students experience intrinsic motivation when they have a supportive learning environment that encourages autonomy, competency, and relatedness (Deci & Ryan, 1985; Kusurkar et al., 2011; Niemiec & Ryan, 2009; Ransdell & Rieck, 2020; Salikhova et al., 2020; Yazdi, 2016).

Elementary student participants provided evidence that the research claims are valid and that students, even in primary grades, can experience intrinsic motivation while learning online. The students' online learning environment provided motivational factors of SDT contributing to their reported engagement, self-awareness, and motivation to be themselves and strive for optimal levels of learning. With evidence demonstrating that elementary students can experience intrinsic motivation while learning online, this knowledge will benefit the improvement and development of the most effective online schools for elementary students.

Students in this study represented learners who were responsive and attempting to learn at their highest capability when they were encouraged by supportive teachers, influential parents or guardians, and a supportive, safe, and comfortable learning environment. A comfortable classroom included autonomy-building learning strategies with assignment choices and flexible

times to complete work. Concerning their need for competence, students had positive responses when recalling teachers commending their efforts in class. Students also expressed their need for relatedness with statements of satisfaction with peer relationships and confidence instilled in them from teacher recognition and academic feedback, which resulted in intrinsically motivated students open to learning and capable of facing challenging schoolwork. While grades and external motivation factors were prevalent rewards, many students recognized them as reasons to learn. Most students expressed satisfaction with the learning process as they shared excitement for unique subjects, creative lessons, and collaborative projects they had enjoyed.

The online learner, like older students in online classes and students in traditional elementary classrooms, is capable of intrinsic motivation linked to higher academic interest and achievement. The study did not show evidence of a relationship between intrinsic motivation and academic performance. However, it did provide a rich, detailed, and informative picture of how elementary students experience intrinsic motivation from home in front of an iPad. Students can be motivated anywhere if they have the necessary supportive elements as individual learners with equal success potential.

Summary

Elementary students experience intrinsic motivation while learning online and can articulate their awareness of this experience even when they are as young as seven. The data gathered from the students revealed significant ways students are motivated to learn online. In addition, participating in this study revealed unexpected indications of the depth of student awareness about how they think and feel about the experience of motivational learning online. The students knew what motivation was, and each had experiences with feeling motivated. Knowing students experience motivation in elementary school online with specific needs

fulfilled indicates that young students can internalize motivation to learn. Therefore, students need learning environments created to nurture these needs and allow the development of this motivation to grow. With individualized learning and external influences enhancing their experience with intrinsic motivation, students will continue to develop feelings of autonomy, competency, and relatedness pertinent to their success as lifelong learners. Students articulated what motivates them while learning online, and educators should listen to them and continue to provide what each student needs. Students need a supportive educational environment as a motivational foundation for teachers to encourage learning at their optimal levels.

REFERENCES

- Augustyn, A., Lewis, R., & Lotha, G. (Eds.). (2022). *Elementary education*. Encyclopedia Britannica, Inc. <https://www.britannica.com/topic/elementary-education>
- Ahn, J., & McEachin, A. (2017). School enrollment patterns and achievement in Ohio's online charter schools. *Educational Researcher*, 46(1), 44–57.
<https://doi.org/10.3102/0013189X17692999>
- Alivernini, F., Manganelli, S., & Lucidi, F. (2016). The last shall be the first: Competencies, equity and the power of resilience in the Italian school system. *Learning and Individual Differences*, 51, 19–28. <https://doi.org/10.1016/j.lindif.2016.08.010>
- Anderman, L., & Anderman, E. (1999). Social predictors of changes in students' achievement goal orientations. *Contemporary Educational Psychology*, 24(1), 21–37.
<https://doi.org/10.1006/ceps.1998.0978>
- Apple, M. (2001). *Educating the “right” way: market, standards, God, and inequality*. Routledge Falmer. <https://doi.org/10.4324/9781315022949>
- Apple, M. (2005). Doing things the ‘right’ way: Legitimizing educational inequalities in conservative times. *Educational Review*, 57(3), 271–293.
<https://doi.org/10.1080/00131910500149002>
- Archer, J. (1994). Achievement goals as a measure of motivation in university students. *Contemporary Educational Psychology*, 19, 430–466. DOI:10.1006/CEPS.1994.1031
- Areepattamannil, S. (2012). Mediation role of academic motivation in the association between school self-concept and school achievement among Indian adolescents in Canada and India. *Social Psychology of Education*, 15, 367–386.
<http://dx.doi.org/10.1007/s11218-012-9187-1>

- Artino, A. (2008). Motivational beliefs and perceptions of instructional quality: Predicting satisfaction with online training. *Journal of Computer Assisted Learning*, 24(3), 260–270. <https://doi.org/10.1111/j.1365-2729.2007.00258.x>
- Ballotpedia. (2022). Academic performance. https://ballotpedia.org/Academic_performance
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1986). *A social cognitive theory, social foundations of thought and action*. Prentice-Hall.
- Baranik, L., Natalie A., Wright, N., & Reburn, K. (2017). Mentoring relationships in online classes. *The Internet and Higher Education*, 34, 65–71. <https://doi.org/10.1016/j.iheduc.2017.05.001>
- Barbour, M. (2014). A history of international K-12 online and blended instruction. In R. Ferdig & K. Kennedy (Eds.), *Handbook of Research on K-12 Online and Blended Learning* (pp. 25–50). Entertainment Technology Center Press, Carnegie Mellon University. <https://www.researchgate.net/publication/324574726>
- Barnett, M., & Hein, S. (2021, August 27). *Back to school by the numbers: 2021-22 school year* National Center for Education Statistics. <https://nces.ed.gov/blogs/nces/post/back-to-school-by-the-numbers-2021-22-school-year>
- Basham, J., Smith, S., Greer, D., & Marino, M. (2013). The scaled arrival of K-12 online education: Emerging realities and implications for the future of education. *Journal of Education*, 193(2), 51–59. <https://doi.org/10.1177/002205741319300206>
- Becker, H. (1970). *Sociological work: Method and substance*. Aldine.
- Beecher, H. (2001). Ethics and clinical research. 1966. *Bulletin of the World Health*

- Organization*, 79(4), 367–372. <https://apps.who.int/iris/handle/10665/268306>
- Bekele, T. (2010). Motivation and satisfaction in internet-supported learning environments: A review. *Educational Technology & Society*, 13(2), 116–127.
<https://www.jstor.org/stable/jeductechsoci.13.2.116>
- Bernard, H., & Ryan, G. (2003). Techniques to identify themes. *Field Methods*, 15(1), 85–109.
<https://doi.org/10.1177/1525822X02239569>
- Berridge, K. (2004). Motivation concepts in behavioral neuroscience. *Physiology & Behavior*, 81(2), 179–209. <https://doi.org/10.1016/j.physbeh.2004.02.004>
- Berridge, K., & Kringelbach, M. (2015). Pleasure systems in the brain. *Neuron*, 86(3), 646–664,
<https://doi.org/10.1016/j.neuron.2015.02.018>
- Berson, I., Berson, M., & Gray, C. (2019). *Participatory methodologies to elevate children's voice and agency*. Information Age Publishing.
- Bolkan, S., & Goodboy, A. (2015). Exploratory theoretical tests of the instructor humor-student learning link. *Communication Education*, 64(1), 45–64.
<https://doi.org/10.1080/03634523.2014.978793>
- Boticki, I., Baksa, J., Seow, P., & Looi, C. (2015). Usage of a mobile social learning platform with virtual badges in a primary school. *Computers in Education*, 86, 120–136.
<https://doi.org/10.1016/j.compedu.2015.02.015>
- Boudreau, E. (2019, October 10). *Tapping the power of intrinsic motivation: Strategies to promote autonomy and other levers for motivation in an inclusive classroom*. Harvard Graduate School of Education.
<https://www.gse.harvard.edu/news/uk/19/10/tapping-power-intrinsic-motivation>
- Bradley, R., Browne, B., & Kelley, H. (2017). Examining the influence of self-efficacy and self-

- regulation in online learning. *College Student Journal*, 51(4), 518–530.
- Brinkmann S., & Kvale, S. (2014). *Interviews: Learning the craft of qualitative research interviewing* (3rd ed.). Sage Publications.
- Brophy, J. (2010). *Motivating students to learn* (3rd ed.). Routledge.
- Burdina, G., Krapotkina, I., & Nasyrova, L. (2019). Distance learning in elementary school classrooms: An emerging framework for contemporary practice. *International Journal of Instruction*, 12(1), 1–16. <https://doi.org/10.29333/iji.2019.1211a>
- Burke, C. (2005). “Play in focus”: Children researching their own spaces and places for play. *Children, Youth, and Environments*, 15(1), 27–53.
<https://www.jstor.org/stable/10.7721/chilyoutenvi.15.1.0027>
- Caelli, K. (2001). Engaging with phenomenology: Is it more of a challenge than it needs to be? *Qualitative Health Research*, 11(2), 273–281.
<https://doi.org/10.1177/104973201129118993>
- Capon-Sieber, V., Köhler, C., Alp Christ, A., Helbling, J. and Praetorius, A-K. (2022). The Role of relatedness in the motivation and vitality of university students in online classes during social distancing. *Frontiers in Psychology*, 12, 1–16.
<https://doi.org/10.3389/fpsyg.2021.702323>
- Caine, R., & Caine, G. (1990, Oct.). Understanding a brain-based approach to learning and teaching. *Educational Leadership*, 66–70. (EJ416439). ERIC.
- Cardella, G., Hernandez-Sanchez, B., & Sanchez-Garcia, J. (2020). Basic psychological needs as a motivational competence: Examining validity and measurement invariance of Spanish BPNSF scale. *Sustainability*, 12(13), 1–13.
<https://doi.org/10.3390/su12135422>

- Carpenter, D. (2007). Phenomenology as method. In H. J. Streubert & D. R. Carpenter (Eds.), *Qualitative research in nursing: Advancing the humanistic imperative*, (pp. 75–99). Lippincott Williams & Wilkins.
- Carrington, S., Allen, K., & Osmolowski, D. (2007). Visual narrative: A technique to enhance secondary students' contribution to the development of inclusive, socially just school environments. Lessons from a box of crayons. *Journal of Research in Special Educational Needs*, 7(1), 8–15. <https://doi.org/10.1111/j.1471-3802.2007.00076.x>
- Cela, K., Sicilia, M., & Sánchez-Alonso, S. (2016). Influence of learning styles on social structures in online learning environments. *British Journal of Educational Technology*, 47(6), 2–24. <https://doi.org/10.1111/bjet.12267>
- Center for Self Determination Theory (CSDT). (2022). *Intrinsic Motivation Inventory (IMI)*. <https://selfdeterminationtheory.org/intrinsic-motivation-inventory/>
- Chan, Z., Fung, Y., & Chien, W. (2013). Bracketing in phenomenology: Only undertaken in the data collection and analysis process. *The Qualitative Report*, 18(30), 1–9. <https://doi.org/10.46743/2160-3715/2013.1486>
- Chen, C., Zhang, T., Gu, X., Lee, J., Ren, S., & Wang, H. (2019). Understanding adolescents' support, need satisfaction, and health-related outcomes: A self-determination health behavior perspective. *International Journal of Environmental Research and Public Health*, 17, 104. <https://doi.org/10.3390/ijerph17010104>
- Chen, K., Jang, S., & Branch, R. (2010). Autonomy, affiliation, and ability: Relative salience of factors that influence online learner motivation and learning outcomes. *Knowledge Management & E-Learning: An International Journal*, 2(1), 30–50. <https://doi.org/10.34105/j.kmel.2010.02.004>

- Charteris, J., Quinn, F., Parkes, M., Fletcher, P., & Reyes, V. (2016). e-Assessment for learning and performativity in higher education: A case for existential learning. *Australasian Journal of Educational Technology*, 32(3), 112–122.
<https://doi.org/10.14742/ajet.2595>
- Chiu, T. K. F. (2021). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. *Journal of Research on Technology in Education*, 4, 1–17. <https://doi.org/10.1080/15391523.2021.1891998>
- Cho, M., & Shen, D. (2013). Self-regulation in online learning. *Distance Education*, 34(3), 290–301. <https://dx.doi.org/10.1080/01587919.2013.835770>
- CITI Program. (2022). *Human subjects research (HSR)*. CITIProgram.org.
- Clancy, R., Herring, M., & Campbell, M. (2017). Motivation measures in sport: A critical review and bibliometric analysis. *Frontiers in Psychology*, 8, 348, 1–12.
<https://doi.org/10.3389/fpsyg.2017.00348>
- Cojocariu, V., Lazar, I., & Lazar, G. (2016). The ambivalence and weaknesses of e-learning educational services. *BRAIN*, 7(3), 55–64.
<https://lumenpublishing.com/journals/index.php/brain/article/view/2089>
- Conesa, P., & Dunabeitia, J. (2021). The Basic Psychological Needs in the Classroom Scale (BPNS-CS). *Behavioral Sciences*, 11(96), 1–13. <https://doi.org/10.3390/bs11070096>
- Connell, J., & Wellborn, J. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self-processes and development: The Minnesota symposia on child development*, 23, (pp. 43–77). Lawrence Erlbaum Associates, Inc.
- Conradty, C., & Bogner, F. (2022). Measuring students' school motivation. *Education Science*

- 12, 378. <https://doi.org/10.3390/educsci12060378>
- Cook, D., & Artino, A. (2016). Motivation to learn: An overview of contemporary theories. *Medical Education*, 50, 997–1014. <https://doi.org/10.1111/medu.13074>
- Coon, D., & Mitterer, J., & Martini, T. (2010). *Introduction to psychology: Gateways to mind and behavior with concept maps*. Wadsworth.
- Covington, M. V. (2000). Goal theory, motivation, and school achievement: An integrative review. *Annual Review of Psychology*, 51, 171–200. <https://doi.org/10.1146/annurev.psych.51.1.171>
- Center for Research on Education Outcomes (CREDO). (2015). *Online Charter School Study 2015*. https://credo.stanford.edu/sites/g/files/sbiybj6481/f/online_charter_study_final.pdf
- Creswell, J. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Sage.
- Creswell, J., & Clark, V. (2004). *Principles of qualitative research: Designing a qualitative study*. Office of Qualitative & Mixed Methods Research.
- Creswell, J., & Poth, C. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage.
- Crompton, H., Burke, D., & Lin, Y. (2019, Mar.). Mobile learning and student cognition: A systematic review of PK-12 research using Bloom's taxonomy. *British Journal of Educational Technology*, 50(2), 684–701. <https://doi.org/10.1111/bjet.12674>
- Curriculum Associates-i-Ready. (2022). *i-Ready Assessment Diagnostic Assessment*. <https://www.curriculumassociates.com/programs/i-ready-assessment/diagnostic>
- Darbyshire, P., MacDougall, C., & Schiller, W. (2005). Multiple methods in qualitative research with children: More insight or just more? *Qualitative Research*, 5(4), 417–436.

<https://doi.org/10.1177/1468794105056>

Deci, E., Eghrari, H., Patrick, B., & Leone, D. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, 62(1), 119–142.

<https://doi.org/10.1111/j.1467-6494.1994.tb00797.x>

Deci, E., Koestner, R., & Ryan, R. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125(6), 627–668. <https://doi.org/10.1037/0033-2909.125.6.627>

Deci, E., & Ryan, R. (1985). *Intrinsic motivation and self-determination in human behavior*.

Springer Science & Business Media. <https://doi.org/10.1007/978-1-4899-2271-7>

Deci, E., & Ryan, R. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54–67.

<https://doi.org/10.1006/ceps.1999.1020>

Deci, E., & Ryan, R. (2000b) Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.

<https://doi.org/10.1037/0003-066X.55.1.68>

Deci, E., & Ryan, R. (2000c). The “what” and “why” of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry*, 11(4), 227–268.

https://doi.org/10.1207/S15327965PLI1104_01

Deci, E., & Ryan, R. (2017). *Self-determination theory*. The Guilford Press.

Deci, E., Schwartz, A., Sheinman, L., & Ryan, R. (1981). An instrument to assess adults’ orientations toward control versus autonomy with children: Reflections on intrinsic motivation and Perceived Competence. *Journal of Educational Psychology*, 73, 642–650. <https://doi.org/10.1037/0022-0663.73.5.642>

- DeCuir-Gunby, J., & Schutz, P. (2017). *Developing a mixed methods proposal: A practical guide for beginning researchers*. Sage.
- Diamon, P. (2020, Sept. 8). *Microsoft business insights and ideas: 10 tips to protect your files on your PC and in the Cloud*.
<https://www.microsoft.com/en-us/microsoft-356/business-insights-ideas/resources/10-tips-to-protect-your-files-on-pc-and-the-cloud>
- DiPietro, M., Ferdig, R., Black, E., & Preston, M. (2008). Best practices in teaching k-12 online: Lessons learned from Michigan virtual schoolteachers. *Journal of Interactive Online Learning*, 7(1), 10–35. <https://www.ncolr.org/jiol/issues/pdf/7.1.2.pdf>
- Du, J., Fan, X., Xu, J., Wang, C., Sun, L., & Liu, F. (2018, Oct. 23). Predictors for students' self-efficacy in online collaborative groupwork. *Association for Educational Communications and Technology*, 67, 767–791. <https://doi.org/10.1007/s11423-018-9631-9>
- Duncan, T., & McKeechie, W. (2005). The making of the motivated strategies for learning questionnaire. *Educational Psychologist*, 40, 117–128.
https://doi.org/10.1207/s15326985ep4002_6
- Elliott, A. (2004). Multimethod approaches in educational research. *International Journal of Disability, Development & Education*, 51, 135–149.
<https://doi.org/10.1080/10349120410001687364>
- Easton, S. (2003). Clarifying the instructor's role in online distance learning. *Communication Education*, 52(2), 87–105. <https://doi.org/10.1080/03634520302470>
- Ellis, P. (2016). The language of research: Phenomenological research. *Wounds UK*, 12(1), 128–129. Corpus ID: 152068658.
- Emojipedia. (2022). *Smileys and people*. <https://emojipedia.org/people/>

- Evans, M., & Boucher, A. (2015). Optimizing the power of choice: Supporting student autonomy to foster motivation and engagement in learning. *Mind, Brain, and Education*, 9(2), 87–91. <https://doi.org/10.1111/mbe.12073>
- Ertmer, P., & Newby, T. (1993). Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 6(4), 50–72. <https://doi.org/10.1111/j.1937-8327.1993.tb00605.x>
- Fabriz, S., Mendzheritskaya, J., and Stehle, S. (2021). Impact of synchronous and asynchronous settings of online teaching and learning in higher education on students' learning experience during COVID-19. *Frontiers in Psychology*, 12, 1–16. <https://doi.org/10.3389/fpsyg.2021.733554>
- Ferlin, L. (2020). Distance learning in elementary school-participant experiences at the upper elementary level (5th-8th Grade). *Zivot i Skola*, 66(2), 93–104. <https://doi.org/10.32903/zs.66.2.8>
- Filak, V., & Sheldon, K. (2003). Student psychological need satisfaction and college teacher-course evaluations. *Educational Psychology*, 23(3), 235–247. <https://doi.org/10.1080/0144341032000060084>
- Fiske, E., & Ladd, H. (2000). *When schools compete: A cautionary tale*. Brookings Institution Press.
- Fitzpatrick, B., Berends, M., Ferrare, J., & Waddington, R. (2020). Virtual illusion: Comparing student achievement and teacher and classroom characteristics in online and brick-and-mortar charter schools. *Educational Researcher*, 49(3), 161–175. <https://doi.org/10.3102/0013189X20909814>
- Flavell, J. (1999). Cognitive development: Children's knowledge about the mind. *Annual Review*

- of Psychology*, 50(21), 45-117. <https://doi.org/10.1146/annurev.psych.50.1.21>
- Fox, J. (2018). An unlikeable truth: Social media like buttons are designed to be addictive. They're impacting our ability to think rationally. *Index on Censorship*, 47(3), 11–13. <https://doi.org/10.1177/0306422018800245>
- Freeman, M., & Mathison, S. (2009). *Researching children's experiences*. The Guilford Press.
- Froiland, J., & Oros, E. (2014). Intrinsic motivation, perceived competence, and classroom engagement as longitudinal predictors of adolescent reading achievement. *Educational Psychology*, 34, 119-132. <https://doi.org/10.1080/01443410.2013.822964>
- Fulmer, S., & Frijters, J. (2009). A review of self-report and alternative approaches in the measurement of student motivation. *Educational Psychology Review*, 21(3), 219–246. <https://doi.org/10.1007/s10648-009-9107-x>
- Fulton, T., Edelen, D., Kebreab, L., Greer, M., Caton, J., Brewer, J., Bush, S., & Mohr-Schroeder. (2020). Integrative virtual stem: Ensuring access in distance learning. *The Elementary STEM Journal*, 22–25. <https://www.iteea.org/Publications/Journals/ESCJournal/ESJ-Dec20.aspx>
- Gagne, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion*, 27(3), 199–224. <https://doi.org/10.1023/A:1025007614869>
- Garrison, D., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2), 87–105. [https://doi.org/10.1016/S1096-7516\(00\)00016-6](https://doi.org/10.1016/S1096-7516(00)00016-6)
- Garrison, D., & Baynton, M. (1987). Beyond independence in distance education: The concept of control. *The American Journal of Distance Education*, 1(3), 3–15.

<https://doi.org/10.1080/08923648709526593>

- Gazzaniga, M., Heatherton, T., & Halpern, D. (2010). *Psychological sciences: Mind, brain, and behavior* (3rd Ed.). W. W. Norton & Company.
- Giesbers, B., Rienties, B., Tempelaar, D., & Gijssels, W. (2013). Investigating the relations between motivation, tool use, participation, and performance in an e-learning course using web-videoconferencing. *Computers in Human Behavior*, 29(1), 285–292.
<https://doi.org/10.1016/j.chb.2012.09.005>
- Gillies, D. (2008). Student perspective on videoconferencing in teacher education at a distance. *Distance Education*, 29(1), 107–118. <https://doi.org/10.1080/01587910802004878>
- Girelli, L., Cavicchiolo, E., Lucidi, F., Cozzolino, M., Alivernini, F., & Manganelli, S. (2019). Psychometric properties and validity of a brief scale measuring basic psychological needs satisfaction in adolescents. *ECPS Journal*, 20.
<https://doi.org/10.7358/ecps-2019-020-gire>
- Girelli, L., Manganelli, S., Alivernini, F., & Lucidi, E. (2016). A self-determination theory-based intervention to promote healthy eating and physical activity in school-aged children. *Cuadernos de Psicología del Deporte*, 16(16), 13–20. <https://revistas.um.es/cpd>
- Goldman, Z., Goodboy, A., & Weber, K. (2017). College students' psychological needs and intrinsic motivation to learn: An examination of self-determination theory. *Communication Quarterly*, 65(2), 167–191.
<https://doi.org/10.1080/01463373.2016.1215338>
- Google. (2022). *Google privacy policy understand the basics of privacy in Google docs, sheets & slides*. Google.com. <https://support.google.com/docs/answer/10381817?hl=en>
- Gordon, B. (2020, March). Vulnerability in research: Basic ethical concepts and general

approach to review. *Ochsner Journal*, 20(1), 34–38.

<https://doi.org/10.31486/toj.19.0079>

Gottfried, A. (1982). Relationships between academic intrinsic motivation and anxiety in children and young adolescents. *Journal of School Psychology*, 20, 205–215.

[https://doi.org/10.1016/0022-4405\(82\)90050-4](https://doi.org/10.1016/0022-4405(82)90050-4)

Gottfried, A. (1983). Intrinsic motivation in young children. *Young Children*, 39(1), 64–73.

<https://www.jstor.org/stable/42658350>

Gottfried, A. (1985). Academic intrinsic motivation in elementary and junior high school students. *Journal of Educational Psychology*, 77(6), 631–645.

<https://doi.org/10.1037/0022-0663.77.6.631>

Gottfried, A. (1986). *CAIMI: Children's Academic Intrinsic Motivation Inventory*.

Psychological Assessment Resources.

Gottfried, A. (1990). Academic intrinsic motivation in young elementary school children.

Journal of Educational Psychology, 82(3), 525–538.

<https://doi.org/10.1037/0022-0663.82.3.525>

Gottfried, A., & Gottfried, A. (1996). A longitudinal study of academic intrinsic

motivation in intellectually gifted children: Childhood through early

adolescence. *Gifted Child Quarterly*, 40(4), 179–183.

<https://doi.org/10.1177/001698629604000402>

Gottfried, A., Fleming, J., & Gottfried, A. (1994). Role of parental motivational practices in children's academic intrinsic motivation and achievement. *Journal of Educational*

Psychology, 86(1), 104–113. <https://doi.org/10.1037/0022-0663.86.1.104>

Gottfried, A., Fleming, J., & Gottfried, A. (1998). Role of cognitively stimulating home

- environment in children's academic intrinsic motivation: A longitudinal study. *Child Development*, 69(5), 1448–1460. <https://doi.org/10.2307/1132277>
- Gottfried, A., Fleming, J., & Gottfried, A. (2001). Continuity of academic intrinsic motivation from childhood through late adolescence: A longitudinal study. *Journal of Educational Psychology*, 93(1), 3–13. <https://doi.org.cui.idm.oclc.org/10.1037/0022-0663.93.1.3>
- Guay, R., Vallerand, R., & Blanchard, C. (2000). On the assessment of situational intrinsic and extrinsic motivation: The Situational Motivational Scale (SIMS). *Motivation and Emotion*, 24(3), 175–213. <http://dx.doi.org/10.1023/A:1005614228250>
- Guay, F., Roy, A., & Valois, P. (2017). Teacher structure as a predictor of students' perceived competence and autonomous motivation: The moderating role of differentiated instruction. *British Journal of Educational Psychology*, 87, 224–240. <https://doi.org/10.1111/bjep.12146>
- Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, 16, 70–80. <https://doi.org/10.1016/j.psychsport.2014.08.013>
- Harter, S., & Pike, R. (1984). The pictorial scale of Perceived Competence and Social Acceptance for Young Children. *Child Development*, 55(6), 1969–1982. <https://doi.org/10.2307/1129772>
- Hartnett, M. (2016). *Motivation in online education*. Springer. https://doi.org/10.1007/978-981-10-0700-2_2
- Hartnett, M., St. George, A., & Dron, J. (2011). Examining motivation in online distance

- learning environments: Complex, multifaceted, and situation dependent. *International Review of Research in Open and Distributed Learning* 12(6), 20–38.
<https://doi.org/10.19173/irrodl.v12i6.1030>
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112. <https://doi.org/10.3102/003465430298487>
- Hau, Y., & Kim, Y. (2011). Why would online gamers share their innovation-conducive knowledge in the online game user community? Integrating individual motivations and social capital perspectives. *Computers in Human Behavior*, 27(2), 956–970.
<https://doi.org/10.1016/j.chb.2010.11.022>
- Hays, D., & Singh, A. (2012). *Qualitative inquiry in clinical and educational settings*. Guilford Press.
- Hayward, C. (2004, Sept.). Thinking in, around, and about the curriculum: The role of cognitive education. *International Journal of Disability, Development, & Education*, 51(3), 231–252. <https://doi.org/10.1080/1034912042000259215>
- Hoskins, S., & Van Hoof, J. (2005). Motivation and ability: Which students use online learning and what influence does it have on their achievement? *British Journal of Educational Technology*, 36(2), 177–192. <https://doi.org/10.1111/j.1467-8535.2005.00451.x>
- Huett, J., Moller, L., Foshay, W., & Coleman, C. (2008, Sept.-Oct.). The evolution of distance education: Implications for instructional design on the web. *TechTrends*, 52(5), 63–67.
<https://doi.org/10.1007/s11528-008-0179-0>
- Hulin, C., Netemeyer, R., & Cudeck, R. (2001). Can a reliability coefficient be too high? *Journal of Consumer Psychology*, 10, 55–58. <https://doi.org/10.2307/1480474>
- Jaber, L., Dini, V., Hammer, D., & Danahy, E. (2018). Targeting disciplinary practices in an

- online learning environment. *Science Education*, 102(4), 668–692.
<https://doi.org/10.1002/sce.21340>
- Jaarsom, A., Kinaschuk, K., & Xing, L. (2015). Kierkegaard, despair, and the possibility of education: Teaching Existentialism Existentially. *Studies in Philosophy and Education*, 35, 445–461. <https://doi.org/10.1007/s11217-015-9488-x>
- Jarvenoja, H., & Jarvela, S. (2005). How students describe the sources of their emotional and motivational experiences during the learning process: A qualitative approach. *Learning & Instruction*, 15, 465–480. <https://doi.org/10.1016/j.learninstruc.2005.07.012>
- Johns, R. (2010). Likert items and scales. *Survey Question Bank: Methods Fact Sheet*, 1(1), 11–28. https://dam.ukdataservice.ac.uk/media/262829/discover_likertfactsheet.pdf
- Johnson, R., & Turner, L. (2003). *Data collection strategies in mixed methods research*. Sage.
- Johnston, M., & Finney, S. (2010). Measuring basic needs satisfaction: Evaluating previous research and conducting new psychometric evaluations of the Basic Needs Satisfaction in General Scale. *Contemporary Educational Psychology*, 35, 280–296.
<https://doi.org/10.1016/j.cedpsych.2010.04.003>
- Kapp, K. (2012). *The gamification of learning and instruction: Game-based methods and strategies for training and education*. John Wiley & Sons.
- Karabenick, S., Woolley, M., Friedel, J., Ammon, B., Blazeovski, J., Bonney, C., De Groot, E., Gilbert, M., Musu, L., Kempler, T., & Kelly, K. (2007). Cognitive processing of self-report items in educational research: Do they think what we mean? *Educational Psychologist*, 42, 139–151. <https://doi.org/10.1080/00461520701416231>
- Kauffman, D. (2004). Self-regulated learning in web-based environments: Instructional tools designed to facilitate cognitive strategy use, metacognitive processing, and motivational

- beliefs. *Journal of Educational Computing Research*, 30(1-2), 139–161.
<https://doi.org/10.2190/AX2D-Y9VM-V7PX-0TA>
- Keengwe, J., & Kidd, T. (2010). Towards best practices in online learning and teaching in higher education. *Merlot Journal of Online Learning and Teaching*, 6(2), 533–541.
https://www.researchgate.net/publication/285633345_Towards_best_practice_in_online_learning_and_teaching_in_higher_education
- Kelleher, I., & Whitman, G. (2018). A bridge no longer too far: A case study of one school's exploration of the promise and possibilities of mind, brain, and education science for the future of education. *Mind, Brain, and Education*, 12(4), 224–230.
<https://doi.org/10.1111/mbe.12163>
- Keller, J. (2008). First principles of motivation to learn and e-learning. *Distance Education*, 29(2), 175–185. <https://doi.org/10.1080/01587910802154970>
- Klaeijns, A., Vermeulen, M., & Martens, R. (2018). Teachers' innovative behaviour: The importance of basic psychological need satisfaction, intrinsic motivation, and occupational self-efficacy. *Scandinavian Journal of Educational Research*, 62, 769–782.
<https://doi.org/10.1080/00313831.2017.1306803>
- Krammer, G., Pflanzl, B., and Matischek-Jauk, M. (2020). Aspects of online teaching and their relationship with positive experience and motivation among student teachers: mixed-method findings at the beginning of COVID-19. *Z. Bildungsforschung* 10, 337–375.
<https://doi.org/10.1007/s35834-020-00283-2>
- Kusurkar, R., Croiset, G., & Cate, O. (2011). Twelve tips to stimulate intrinsic motivation in students through autonomy-supported classroom teaching derived from self-determination theory. *Medical Teacher*, 33, 978–82.

- <https://doi.org/10.3109/0142159X.2011.599896>
- Kwon, S., Seo, Y., & Lee, S. (2001). Designing Woo based environment for effective learning community building. *Korean Association for Educational Information and Broadcasting*, 7(4), 147–170.
- Lavrakas, P. (2008). *Encyclopedia of survey research methods*. Sage.
- Lee, K. (2006). Online learning in primary schools: Designing for school culture change. *Educational Media International*, 43(2), 91–106. <https://www.learntechlib.org/p/98877/>
- Lee, Y., & Choi, J. (2011). A review of online course dropout research: Implications for practice and future Research. *Educational Technology Research and Development*, 59(5), 593–618. <https://www.learntechlib.org/p/50902/>
- Lee, E., Pate, J., & Cozart, D. (2015). Autonomy support for online students. *Association for Educational Communications and Technology*, 59(4), 54–61. <https://doi.org/10.1007/s11528-015-0871-9>
- Lehtinen, A., & Viiri, J. (2017). Guidance provided by teacher and simulation for inquiry-based learning: A case study. *Journal of Science Education and Technology*, 26(2), 193–206. <https://doi.org/10.1007/s10956-016-9672-y>
- Lepper, M., Corpus, J., & Iyengar, S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of Educational Psychology*, 97, 184–196. <http://dx.doi.org/10.1037/0022-0663.97.2.184>
- Lopez-Garrido, G. (2021, Jan 04). *Self-determination theory and motivation*. Simply Psychology. <https://www.simplypsychology.org/self-determination-theory.html>
- Liu, S., Joy, M., & Griffiths, N. (2010). *Students' perceptions of the factors leading to unsuccessful group collaboration*. Paper presented at 2010 IEEE 10th International

Conference on Advanced Learning Technologies. Sousse, Tunisia.

Liu, W., Li, X., & Zou, Y. (2018). The formation of teachers' intrinsic motivation in professional development. *Springer Science Business Media*, 53, 418–430.

<https://link.springer.com/article/10.1007%2Fs12124-018-9465-3>

Liu, Y., Hau, K., Liu, H., Wu, J., Wang, X., & Zheng, X. (2020). Multiplicative effect of intrinsic and extrinsic motivation on academic performance: A longitudinal study of Chinese students. *Journal of Personality*, 88, 584–595.

<https://doi.org/10.1111/jopy.12512>

Lou, J., Fang, Y., Lim, K., & Peng, J. (2013). Contributing high quantity and quality knowledge to online Q & A communities. *Journal of the American Society for Information Science and Technology*, 64(2), 356–371. <https://doi.org/10.1002/asi.22750>

Luria, E., Shalom, M., & Levy, D. (2021), Cognitive neuroscience perspectives on motivation and learning: Revisiting self-determination theory. *Mind, Brain, and Education*, 15, 5–17. <https://doi.org/10.1111/mbe.12275>

Macakova, V., & Wood, C. (2020). The relationship between academic achievement, self-efficacy, implicit theories, and basic psychological needs satisfaction among university students. *Studies in Higher Education*, 1–11.

<https://doi.org/10.1080/03075079.2020.1739017>

Malone, T., & Thomas, W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive Science*, 5(4), 333–369. [https://doi.org/10.1016/S0364-0213\(81\)80017-1](https://doi.org/10.1016/S0364-0213(81)80017-1)

Mansur, H., Jumadi, Mastur, Utama, A., & Prastitasari, H. (2021). The problem of distance learning during the COVID-19 pandemic. *Ilkogretim Online-Elementary Education Online*, 20(4), 168–175. <https://doi.org/10.17051/ilkonline.2021.04.19>

Marks, D. (2016). Theory to practice: Quality instruction in online learning environments.

National Teacher Education Journal, 9(2), 75–80.

https://img1.wsimg.com/blobby/go/003a8836-40db-4b0c-b44f-4211ffada1e1/downloads/1ckfvfhh0_837785.pdf

Marton, F. (1986). Phenomenography—A research approach to investigating different understandings of reality. *Journal of Thought*, 21(3), 28–49.

<https://www.jstor.org/stable/42589189>

MAXQDA. (2022). *User access management*. MAXQDA.com.

<https://www.maxqda.com/help-mx20/teamwork/calling-activating-user-management>

Maxwell, J. (2013). *Qualitative research design: An interactive approach*. Sage.

Mayer, R. (2017). How can brain research inform academic learning and instruction?

Educational Psychology Review, 29, 835–846.

<https://doi.org/10.1007/s10648-016-9391-1>

McAuley, E., Duncan, T., & Tammen, V. (1987). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis.

Research Quarterly for Exercise and Sport, 60, 48–58.

<https://doi.org/10.1080/02701367.1989.10607413>

McAuley, E., & Tammen, V. (1989). The effects of subjective and objective competitive outcomes on intrinsic motivation. *Journal of Sport and Exercise Psychology*, 11, 84–93.

<https://doi.org/10.1123/jsep.11.1.84>

McCombs, B. (2015). Learner-centered online instruction. *New Directions for Teaching & Learning*, 144, 57–71. <https://doi.org/10.1002/tl.20163>

McWhaw, K., & Abrami, P. (2001). Student goal orientation and interest: Effects on students'

- use of self-regulated learning strategies. *Contemporary Educational Psychology*, 26(3), 311–329. <https://doi.org/10.1006/ceps.2000.1054>
- Merriam-Webster. (n.d.). *Distance learning*. In Merriam-Webster.comdictionary.
<https://www.merriam-webster.com/dictionary/distance%20learning>
- Mese, E., & Sevilen, C. (2021). Factors influencing EFL students' motivation in online learning: A qualitative case study. *Journal of Educational Technology & Online Learning*, 4(1), 1–22. <https://files.eric.ed.gov/fulltext/EJ1286748.pdf>
- Meyer, R. (2017). How can brain research inform academic learning and instruction? *Educational Psychology Review*, 29, 835–846.
<https://doi.org/10.1007/s10648-016-9391-1>
- Microsoft. (2022). *Microsoft products and your data*. Microsoft.com.
<https://privacy.microsoft.com/en-US/privacy-in-our-products>
- Miller, G. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, 63(2), 81–97.
<https://doi.org/10.1037/h0043158>
- Montesino, P. (1998). *Effect of electronic portfolio assessments on the motivation and computer interest of fourth and fifth grade students in a Massachusetts suburban school* (Publication No. 732) [Doctoral dissertation, Nova Southeastern University]. NSUWorks, Graduate School of Computer and Information Sciences.
https://nsuworks.nova.edu/gscis_etd/732/
- Moore, M., & Kearsley, G. (2005). *Distance education: A systems view* (2nd ed.). Wadsworth.
- Moos, D. C., & Azevedo, R. (2009). Learning with computer-based learning environments: A Literature review of computer self-efficacy. *Review of Educational Research*, 79(2), 576–

600. <https://doi.org/10.3102/0034654308326083>
- Morgan, R., & Hunt, S. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58, 20–38. <https://doi.org/10.1177/002224299405800302>
- Moss, J., Deppeler, J., Astley, L., & Pattison, K. (2007). Student researchers in the middle: Using Visual images to make sense of inclusive education. *Journal of Research in Special Educational Needs*, 7(1), 46–54. <https://doi.org/10.1111/j.1471-3802.2007.00080.x>
- Moustakas, C. (1994). *Phenomenological research methods*. Sage.
- Mozelius, P. (2015). Game based learning: A way to stimulate intrinsic motivation. *Academic Conferences & Publishing International*, 272–278.
- https://www.researchgate.net/publication/263564163_Game_Based_Learning_-_a_Way_to_Stimulate_Intrinsic_Motivation
- National Institutes of Health (NIH). (n.d.). *Vulnerable and other populations requiring additional protections*. <https://grants.nih.gov/policy/humansubjects/policies-and-regulations/vulnerable-populations.htm>
- National Center for Education Statistics. (2022). *Impact of the Coronavirus Pandemic on the Elementary and Secondary Education System. Condition of Education*. U.S. Department of Education, Institute of Education Sciences.
- <https://nces.ed.gov/programs/coe/indicator/tcb>.
- Nehme, M. (2010). E-learning and students' motivation. *Legal Education Review*, 20, 223–239.
- <https://ssrn.com/abstract=2347142>
- Niedderer, H., & Goldberg, F. (1995, April 7-11). *Learning pathway and knowledge construction in electric circuits* [Paper presentation]. NARST 1995: European Conference on Research in Science Education, Anaheim, CA, United States.

[https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.532.3647&rep =
rep1&type=pdf](https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.532.3647&rep=rep1&type=pdf)

- Niemiec C., & Ryan R. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and Research in Education*, 7(2), 133–144. <https://doi.org/10.1177/1477878509104318>
- Nokelainen, P. (2006). An empirical assessment of pedagogical usability criteria for digital learning material with elementary school students. *Educational Technology and Society*, 9(2), 178–197. (EJ836833). ERIC.
- Olivares, G., Navarro, Ó., Sánchez-Verdejo, F., & Muelas, Á. (2020). Psychological well-being and intrinsic motivation: Relationship in students who begin university studies at the School of Education in Ciudad Real. *Frontiers in Psychology*, 11, 1–10. <https://doi.org/10.3389/fpsyg.2020.02054>
- Orsini, C., Evans, P., & Jerez, O. (2015). How to encourage intrinsic motivation in the clinical teaching environment?: A systematic review from the self-determination theory. *Journal of Educational Evaluation for Health Professions*, 12(8), 1–10. <http://dx.doi.org/10.3352/jeehp.2015.12.8>
- Palmer, D. (2017). Wanting and liking: Components of Situated Motivation Constructs. *International Mind, Brain, and Education*, 11(3), 99–108. <https://doi.org/10.1111/mbe.12141>
- Patall, E., Cooper, H., & Wynn, S. (2010). The effectiveness and relative importance of choice in the classroom. *Journal of Educational Psychology*, 102(4), 896–915. <https://doi.org/10.1037/a0019545>
- Paulus, T., & Scherff, L. (2008). “Can anyone offer any words of encouragement?” Online

- dialogue as a support mechanism for preservice teachers. *Journal of Technology and Teacher Education*, 16(1), 113–136. <https://www.learntechlib.org/primary/p/22883/>
- Perry, N., VandeKamp, K., Mercer, L., & Nordby, C. (2002). Investigating teacher-student interactions that foster self-regulated learning. *Educational Psychologist*, 37, 5–15. https://doi.org/10.1207/S15326985EP3701_2
- Pessi, A. (2004). The octagon model of volunteer motivation: Results of a phenomenological analysis. *Voluntar: International Journal of Voluntary & Nonprofit Organizations*, 15(1), 21–46. <https://doi.org/10.1023/B:VOLU.0000023632.89728.ff>
- Pintrich, P., & De Groot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82(1), 33–40. <https://doi.org/10.1037/0022-0663.82.1.33>
- Pischetola, M., & Heinsfeld, B. (2018). Technology and teacher's motivational style: A research study in Brazilian public schools. *Journal of Educational, Cultural and Psychological Studies*, 17, 163–177. <https://doi.org/10.7358/ecps-2018-017-pisc>
- Plant, R., & Ryan, R. (1985). Intrinsic motivation and the effects of self-consciousness, self-awareness, and ego-involvement: An investigation of internally controlling styles. *Journal of Personality*, 53(3), 435–449. <https://doi.org/10.1111/j.1467-6494.1985.tb00375.x>
- PourAli, P., SeifNaraghi, M., & Naderi, E. (2017). Humanistic education and students' educational motivation in Tehran primary schools. *International Journal of Mental Health & Addiction*, 15, 312–322. <https://doi.org/10.1007/s11469-016-9703-1>
- Powell, A., & Patrick, S. (2006). An international perspective of K-12 online learning: A summary of the 2006 NACOL international e-learning survey. North American Council for

- Online Learning. <http://files.eric.ed.gov/fulltext/ED514433.pdf>
- Princeton University. (2022). *Research Integrity and Assurance, Best practices for data analysis of confidential data*. Princeton University. <https://ria.princeton.edu>
- Punch, S. (2002). Research with children: The same or different from research with adults? *Childhood*, 9(3), 321–341. <https://doi.org/10.1177/090756820200900>
- Puzziferro, M. (2008). Online technologies self-efficacy and self-regulated learning as predictors of final grade and satisfaction in college-level online courses. *The American Journal of Distance Education*, 22, 72–89. <https://doi.org/10.1080/08923640802039024>
- Ransdell, S., & Rieck, J. (2020). Closing the distance in distance learning: Strategies to increase intrinsic motivation in the time of COVID-19. *Distance Learning*, 17(3), 87–90.
- Reeve, J. (2006). Teachers as facilitators: What autonomy-supportive teachers do and why their students benefit. *The Elementary School Journal*, 106(3), 225–236.
<https://doi.org/10.1086/501484>
- Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology*, 98, 209–218.
<https://doi.org/10.1037/0022-0663.98.1.209>
- Reeve, J., & Sickenius, B. (1994). Development and validation of a brief measure of the three psychological needs underlying intrinsic motivation: the AFS scales. *Educational and Psychological Measurement*, 54, 506–515.
<https://doi.org/10.1177/0013164494054002025>
- Rice, K. (2006). A comprehensive look at distance education in the K-12 context. *Journal Research on Technology in Education*, 38(4), 425–447.
<https://files.eric.ed.gov/fulltext/EJ768723.pdf>

- Rieser, S., Naumann, A., Decristin, J., Fauth, B., Klieme, E., & Buttner, G. (2016). The connection between teaching and learning: Linking teaching quality and metacognitive strategy use in primary school. *British Journal of Educational Psychology*, 86, 526–545. <https://doi.org/10.1111/bjep.12121>
- Rienties, B., Giesbers, B., Tempelaar, D., Lygo-Baker, S., Segers, M., & Gijssels, W. (2012). The role of scaffolding and motivation in CSCL. *Computers & Education*, 59(3), 893–906. <https://doi.org/10.1016/j.compedu.2012.04.010>
- Riley, S. (2001). Art therapy with adolescents. *The Western Journal of Medicine*, 175(1), 54–57. <https://doi.org/10.1136/ewjm.175.1.54>
- Ritchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible*. Jossey-Bass.
- Ritchhart, R., & Perkins, D. (2008). Teaching students to think. *Educational Leadership*, 65(5), 57–61. <https://pz.harvard.edu/sites/default/files/makingthinkingvisibleEL.pdf>
- Rivero, V. (2005, Sept.). Beyond brick and mortar: E-learning and digital content are changing how we learn and what we're learning. *American School Board Journal*, 40–42.
- Roberts, C., & Hyatt, L. (2018). *The dissertation journey: A practical and comprehensive guide to planning, writing, and defending your dissertation*. Corwin.
- Roy, A., Breaux, R., Sciberras, E., Patel, P., Ferrara, E., Shroff, D., Cash, A., Dvorsky, M., Langberg, J., Quach, J., Melvin, G. A., Jackson, A., & Becker, S. (2021). A preliminary examination of key strategies, challenges, and benefits of remote learning expressed by parents during the COVID-19 pandemic. *PsyArXiv*, 1–32. <https://doi.org/10.31234/osf.io/5ca4v>
- Ryan, R. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43, 450–

461. <http://dx.doi.org/10.1037/0022-3514.43.3.450>

- Ryan, R., & Connell, J. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57, 749–761. <https://doi.org/10.1037/0022-3514.57.5.749>
- Ryan, R., Connell, J., & Plant, R. (1990). Emotions in nondirected text learning. *Learning and Individual Differences*, 2(1), 1–17. [https://doi.org/10.1016/1041-6080\(90\)90014-8](https://doi.org/10.1016/1041-6080(90)90014-8)
- Ryan, R., & Deci, E. (2012). Multiple identities within a single self: A self-determination theory perspective on internalization within contexts and cultures. In M. R. Leary and J. P. Tangney (Eds.), *Handbook of self and identity* (2nd ed.), (pp. 225–246). Guilford Press.
- Ryan, R., & Grolnick, W. (1986). Origins and pawns in the classroom: Self-report and projective assessments of individual differences in children's perceptions. *Journal of Personality and Social Psychology*, 50(3), 550–558. <https://doi.org/10.1037/0022-3514.50.3.550>
- Ryan, W., & Grolnick, R. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, 52(5), 890–898. <https://doi.org/10.1037/0022-3514.52.5.890>
- Ryan, R., Koestner, R., & Deci, E. (1991). Ego-involved persistence: When free-choice behavior is not intrinsically motivated. *Motivation and Emotion*, 15(3), 185–205. <https://doi.org/10.1007/BF00995170>
- Ryan, R., La Guardia, J., Solky-Butzel, J., Chirkov, V., & Kim, Y. (2005). On the interpersonal regulation of emotions: Emotional reliance across gender, relationships, and cultures. *Personal Relationships*, 12(1), 145–163. <https://doi.org/10.1111/j.1350-4126.2005.00106.x>

- Ryan, R., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of personality and Social Psychology*, 45(4), 736.
<https://doi.org/10.1007/BF00995170>
- Ryan, R., & Stiller, J. (1991). The social contexts of internalization: Parent and teacher influences on autonomy, and learning. *Advances in Motivation and Achievement*, 7, 86–114.
- Sage Research Methods Datasets. (2019). *Analyzing interview transcripts of a phenomenological study on the cultural immersion experiences of graduate counseling students*.
<https://methods.sagepub.com/base/download/DatasetStudentGuide/phenomenological>
- Safhalter, A. (2013). Ucionica u oblaku. *Media, Culture, and Public Relations*, 4(1), 45–54.
- Salkind, N. (2006). *Exploring research* (4th ed.). Prentice Hall.
- Salikhova, N., Lynch, M., & Salikhova, A. (2020). Psychological aspects of digital learning: A self-determination theory perspective. *Contemporary Educational Technology*, 12(2), 1–13. <https://doi.org/10.30935/cedtech/8584>
- Sandholtz, J. (1997). *Teaching with technology: Creating student-centered classrooms*. Teachers College Press.
- Sawyer, J., Obeid, R., Bublit, D., Schwartz, A., Brooks, P., & Richmond, A. (2017). Which forms of active learning are most effective: Cooperative learning, writing-to-learn, multimedia instruction, or some combination? *Scholarship of Teaching and Learning in Psychology*, 3(4), 257–271. <https://doi-org.cui.idm.oclc.org/10.1037/stl0000095>
- Schunk, D., Meece, J., & Pintrich, P. (2014). *Motivation in education: Theory, research, and*

- applications* (4th ed.). Pearson.
- Seifriz, R., Duda, J., & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. *Journal of Sport and Exercise Psychology*, 14, 375–391. <https://doi.org/10.1123/jsep.14.4.375>
- Shedivy, S. (2004). Factors that lead some students to continue the study of foreign language past the usual 2 years in high school. *System*, 32, 103–119. <https://doi.org/10.1016/j.system.2003.09.008>
- Shpolianskaya, I., & Seredkina, T. (2020). Intelligent support system for personalized online learning. *BRAIN*, 11(3), 29–35. <https://doi.org/10.18662/brain/11.3/107>
- Siddiqui, S., Thomas, M., & Soomro, N. (2020). Technology integration in education: Source of intrinsic motivation, self-efficacy, and performance. *Journal of E-Learning and Knowledge Society*, 16(1), 11–22. <https://doi.org/10.20368/1971-8829/1135188>
- Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B., & Dochy, F. (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, 79(1), 57–68. <https://doi.org/10.1348/000709908X304398>
- Silver, C., & Lewins, A. (2020). *Using software in qualitative research: A step-by-step guide* (2nd ed.). Sage.
- Skanfors, L. (2009). Ethics in child research: Children's agency and researchers' 'ethical radar.' *Childhoods Today*, 3(1), 1–22.
- Skinner, E., & Belmont, M. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85(4), 571–581. <https://doi.org/10.1037/0022-0663.85.4.571>

- So, W., Chen, Y., & Wan, Z. (2019). Multimedia e-learning and self-regulated science learning: a study of primary school learners' experiences and perceptions. *Journal of Science, Education and Technology*, 28, 508–522. <https://doi.org/10.1007/s10956-019-09782-y>
- Stearns, S. (2017). The lecture and student learning. What is the place of lecture in student learning today? *Communication Education*, 66(2), 243–245. <https://doi.org/10.1080/03634523.2016.1275723>
- Stroet, K., Opdenakker, M., & Minnaert, A. (2013). Effects of need supportive teaching on early adolescents' motivation and engagement: A review of the literature. *Educational Research Review*, 9, 65–87. <https://doi.org/10.1016/j.edurev.2012.11.003>
- Sun, Y., Ni, L., Zhao, Y., Shen, X., & Wang, N. (2019). Understanding students' engagement in MOOC's: An integration of self-determination theory and theory of relationship quality. *British Journal of Educational Technology*, 50(6), 3156–3174. <https://doi.org/10.1111/bjet.12724>
- SurveyMonkey. (2020). *Privacy Notice*. https://www.surveymonkey.com/mp/legal/privacy/?ut_source=legal&ut_source2=privacy-basics&ut_source3=inline#data-retention
- Taie, S., & Goldring, R. (2019). *Characteristics of public elementary and secondary schools in the United States: Results from the 2017–18 National Teacher and Principal Survey First Look (NCES 2019-140)*. U.S. Department of Education. National Center for Education Statistics. <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2019140>
- Teddle, C., & Yu, F. (2007). Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research*, 1(1), 77–100. <https://doi.org/10.1177/1558689806292430>
- The Glossary of Education Reform. (2013). *Great schools partnership*.

<https://www.edglossary.org/in-person-learning/>

Thogersen-Ntoumani, C., & Ntoumanis, N. (2007). A self-determination theory approach to the study of body image concerns, self-presentation, and self-perceptions in a sample of aerobic instructors. *Journal of Health Psychology, 12*(2), 301–315.

<https://doi.org/10.1177/1359105307074267>

Thomas, A., & Mueller, F. (2017). A magic dwells in each beginning? Contextual effects of autonomy support on students' intrinsic motivation in unfamiliar situations. *Social Psychology of Education, 20*, 791–805. <https://doi.org/10.1007/s11218-017-9393-y>

Thomson, S. (2011). Qualitative research: Validity. *JOAAG, 6*(1), 77–82.

https://www.researchgate.net/publication/266483160_Qualitative_Research_Validity

Toyama, K. (2015). *Geek heresy: Rescuing social change from the cult of technology*. Public Affairs.

Trevino, N., & DeFreitas, S. (2014). The relationship between intrinsic motivation and academic achievement for first generation Latino college students. *Social Psychology of Education, 17*, 293–306. <http://dx.doi.org/10.1007/s11218-013-9245-3>

Turner, J., & Patrick, H. (2008). How does motivation develop and why does it change? Reframing motivation research. *Educational Psychologist, 43*(3), 119–131.

<https://doi.org/10.1080/00461520802178441>

Utama, A. (2019). *Challenges and commitments to implementation of full-day school in Banjarmasin*. International Conference on Education Technology. Atlantis Press.

<https://www.atlantis-press.com/article/125925085>

van Manen, M. (1990). *Researching lived experience: Human science for an action sensitive pedagogy*. State University of New York Press.

- Valamis. (2022). *Cognitive learning*. <https://www.valamis.com/hub/cognitive-learning>
- Veal, A. (2005). Researching children's experience: Approaches and methods. In: S. Green & D. Hogan (Eds.), *Creative methodologies in participatory research with children* (pp. 253–272). Sage.
- Veermans, M., & Tapola, A. (2004). Primary school students' motivational profiles in longitudinal settings. *Scandinavian Journal of Educational Research*, 48(4), 373–395. <https://doi.org/10.1080/0031383042000245780>
- Vuksanovic, I. (2009). Mogucnosti za e-učenje u hrvatskom obrazovnom sustavu. *Napredak: Casopis Za Interdisciplinarna Istrazivanja U I Obrazovanju*, 150(3-4), 451–466. <https://hrcak.srce.hr/82828>
- Wagner, C. (2021). PK-5 teacher perspectives on the design of remote teaching: Pedagogies and support structures to sustain student learning online. *Journal of Research on Technology in Education*, 1–16. <https://doi.org/10.1080/15391523.2021.1888340>
- Wallace, T., & Kremzar, M. (2002). *ERP: Making it happen: The implementers' guide to success with enterprise resource planning*. Wiley.
- Wang, T. (2011). Developing Web-based assessment strategies for facilitating junior high school students to perform self-regulated learning in an e-learning environment. *Computers in Education*, 57(2), 1801–1812. <https://doi.org/10.1016/j.compedu.2011.01.003>
- Wang, Y., Tian, L., & Huebner, E. (2019). Basic psychological needs satisfaction at school, behavioral school engagement, and academic achievement: Longitudinal reciprocal relations among elementary school students. *Contemporary Educational Psychology*, 56, 130–139. <https://doi.org/10.1016/j.cedpsych.2019.01.003>
- Wen, J., Zhang, W., & Shu, W. (2019). A cognitive learning model in distance education of

- higher education institutions based on chaos optimization in big data environment. *J Supercomput*, 75, 719–773. <https://doi.org/10.1007/s11227-018-2256-2>
- White, R. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66, 297–333.
- Widjaja, A., & Chen, J. (2017) Online learners' motivation in online learning: The effect of online participation, social presence, and collaboration. In *Learning Technologies in Education: Issues and Trends* (pp. 2–93). Soegijapranata Catholic University.
- Wigfield, A., Klauda, S., & Cambria, J. (2011). Influences on the Development of Academic Self-Regulatory Processes. In B. J. Zimmerman & D. H. Schunk (Eds.). *Handbook of self-regulation of learning and performance* (pp. 33–48). Routledge. <https://doi.org/10.4324/9780203839010>
- Wighting, M., Liu, J., & Rovai, A. (2008). Distinguishing sense of community and motivation characteristics between online and traditional college students. *Quarterly Review of Distance Education*, 9(3), 285–295. (EJ875103). ERIC.
- Wijsman, L., Saab, N., Schuitema, J., Driel, j., & Westenberg, P. (2019). Promoting performance and motivation through a combination of intrinsic motivation stimulation and an extrinsic incentive. *Learning Environments Research*, 22, 65–81. <https://doi.org/10.1007/s10984-018-9267-z>
- Williams, L., & Gill, D. (1995). The role of perceived competence in the motivation of physical activity. *Journal of Sport and Exercise Psychology*, 17, 363–378. <https://doi.org/10.1123/jsep.17.4.363>
- Yazdi, H. (2016). *How educators can foster student motivation*. Digital Promise. <https://digitalpromise.org/2016/09/18/how-educators-can-foster-student-motivation/>

- Yilmaz, K. (2011). The cognitive perspective on learning: Its theoretical underpinnings and implications for classroom practices. *The Clearing House*, 84(5), 204–212.
<https://doi.org/10.1080/00098655.2011.568989>
- You, S., Dang, M., & Lim, S. (2015). Effects of student perceptions of teachers' motivational behavior on reading, English, and mathematics achievement: The mediating role of domain specific self-efficacy and intrinsic motivation. *Child Youth Care Forum*, 45, 221–240. <https://doi.org/10.1007/s10566-015-9326-x>
- Zenovic, I., & Bagaric, I. (2014). Trendovi u otvorenom ucenju na dajinu u svetu I kod nas. *Sinteza: Internet and Education*, 379–384.
<https://portal.sintenza.singidunum.ac.rs/Media/files/2014/379-384.pdf>
- Zimmerman, B. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist*, 25(1), 3–17. https://doi.org/10.1207/s15326985ep2501_2
- Zimmerman, B. (2000). Attaining self-regulation: A social cognitive perspective. In M. Bockaerts, P. R. Pintrich & Moshe Zeidner (Eds.). *Handbook of self-regulation* (pp. 13–39). Academic Press. <https://doi.org/10.1016/B978-012109890-2/50031-7>
- Zimmerman, B. (2002). Becoming a self-regulated learner. An overview. *Theory into Practice*, 41(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2
- Zimmerman, B., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, 23, 614–628. <https://doi.org/10.3102/00028312023004614>
- Zimmerman, B., & Moylan, A. (2009). Self-regulation: Where metacognition and motivation intersect. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Handbook of metacognition in education* (pp. 299–315). Routledge.

- Zimmerman, B., & Schunk, D. (2011). Self-regulated learning and performance: An introduction and an overview. In B. J. Zimmerman & D. H. Schunk (Eds.), *Handbook of self-regulation of learning and performance*, (pp. 1–12). Routledge.
- Zoom. (2022). *Security at Zoom..* <https://explore.zoom.us/en/trust/security/>

APPENDICES

Appendix A: CITI Certificate



Completion Date 11-Sep-2021
Expiration Date 10-Sep-2024
Record ID 44821863

This is to certify that:

Brooke Hermann

Has completed the following CITI Program course:

Not valid for renewal of certification
through CME.

Social & Behavioral Research - Basic/Refresher

(Curriculum Group)

Social & Behavioral Research

(Course Learner Group)

1 - Basic Course

(Stage)

Under requirements set by:

Concordia University Irvine

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w68c08af7-fb94-4ed8-b406-307942fce3ec-44821863

Appendix B: IRB Approval



**CONCORDIA
UNIVERSITY**
IRVINE

IRB DECISION FORM

☐ Standard Review (45 CFR 46.110) ☐ Full Board Review (45 CFR 46)

Review Decision Date: 1/9/2023

Reviewer ID #:

Principal Investigator (PI) Full Name: Brooke Herman

IRB Application/Ticket #: 13155

Title of Study: Intrinsic motivation and online learning in elementary education: A phenomenological mixed methods approach exploring childrens' experience learning online

DECISION

- ☐ Not approved (study is not tenable under IRB Review & Federal Guidelines)
- ☐ Needs revision and resubmission (see below)
- ☒ Approved, conditional upon IRB receipt of these two documents:
1. the DocuSign Agreement form must be signed by both PI and Supervisor and returned to IRB prior to commencement of research;
 2. site authorization forms must be received in writing before commencement of research (site authorization for research conducted at Concordia University Irvine is obtained through OIRA - deborah.lee@cui.edu)

Effective dates of IRB Approval: 1/9/2023

FOLLOW-UP REQUIREMENTS

- IRB Approval is only for the project protocol and duration named above. Any modifications must be submitted to the IRB for review and approval.
- Any adverse events (e.g., data breach, subject harm) must be reported immediately to the IRB.
- An annual report (or upon completion) is required for each project. If the project is to continue beyond one year, a request for continuation must be made in writing one month ahead of time.

REQUIRED REVISIONS, ISSUES, & QUESTIONS

The edits as submitted in Brooke's response to IRB feedback are sufficient; this research study is approved in accordance with the above decision selection.

*For any questions regarding this IRB Decision Form, please contact irb@cui.edu
FWA Assurance #: FWA00030598 (Expiration Date: 01/05/2026)*

Appendix C: Parental Informed Consent Letter

PARENTAL INFORMED CONSENT

Dear Parent(s) and/or Guardian(s):

The kindergarten through sixth graders will be afforded the opportunity to take part in academic research on motivation and online learning. Miss Hermann, our Intervention Teacher, is conducting a research project for her doctorate at Concordia University Irvine, CA. We would like to ask your permission to have your child participate in a two-part survey questionnaire and interview related to this project.

Students participating will be asked to complete a 2-part survey with questions for rating their experience with online learning. The students will participate in this data collection beginning in January and continue with Zoom interviews with Miss Hermann, our intervention teacher. The surveys will take approximately 15-30 minutes and will be conducted at home, on Zoom with Miss Hermann, during school hours. The questions for both data collection sessions will be similar. The assessment is intended to measure motivation and interest related to online learning.

The significance of this study is to identify how students experience intrinsic motivation in learning online. The data collected will help us to improve our school and teaching methods.

Your child will in no way be penalized if you choose not to have him/her participate. Participation in the study is voluntary and requires parent and student consent.

Children's responses to questionnaires and interviews will in no way impact their school grades. The information will, however, be available to an Educational Doctorate candidate, Miss Hermann, who will analyze the student responses before and after completing the questionnaires and interviews. Only Miss Hermann and her University Supervisor will have access to your child's identity and to information that can be associated with your child's identity. The data and documentation will be destroyed on March 30, 2026.

In addition, student interview participants will receive a **free** new [REDACTED] t-shirt. If you choose to participate, please fill out the attached Google forms as soon as possible. There are additional forms for video recording permission and student permission forms for you and your child to complete.

If you have any questions or want to speak to Miss Hermann, please contact her by phone at [REDACTED] or email: [REDACTED]. This is an exciting project, and I look forward to getting it underway.

Please fill out the following forms: [Participation Form](#)

Thank you for your support.

Sincerely,

[REDACTED]

Please check the appropriate box below and sign the form:

PARENTAL INFORMED CONSENT:

I give permission for my child to participate in the study and for their data to be used in the study. I have read and understand this form. Yes ☐ or No ☐

I do not give permission for my child to participate in this study. Yes ☐ or No ☐

VIDEO/AUDIO/PHOTOGRAPH:

I understand this research will be Video Recorded Yes ☐ or No ☐

I give permission for my child to be Video Recorded Yes ☐ or No ☐

Student's Name: _____

Signature of Parent/Guardian: _____

Printed Name of Parent/Guardian: _____

Date: _____

Appendix D: Parental Informed Consent Letter (Spanish)

CONSENTIMIENTO PATERNAL INFORMADO

Estimado(s) Padre(s) y/o Guardian(es);

A los estudiantes del jardín de niños hasta sexto grado tendrán la oportunidad de formar parte en una investigación académica sobre la motivación y el aprendizaje en línea. La Srta. Hermann, nuestra Maestra de Intervenciones, está conduciendo un proyecto de investigación para su doctorado en Concordia University Irvine, CA. Nos gustaría pedirle su permiso de permitir que su niño(a) participe en una encuesta de dos partes y una entrevista relacionada con este proyecto.

Se le pedirá a los estudiantes quienes están participando que completen una encuesta de dos partes con preguntas para calificar su experiencia con el aprendizaje en línea. Los estudiantes tomarán parte en esta recolección de datos al inicio de enero y continuarán con entrevistas a través de Zoom con la Srta. Hermann, nuestra maestra de intervenciones. Las encuestas tomarán aproximadamente 15 a 30 minutos y serán conducidas en casa, a través de Zoom con la Srta. Hermann, durante las horas escolares. Las preguntas para ambas sesiones de recolección de datos serán similares. La evaluación tiene la intención de medir la motivación e interés relacionado con el aprendizaje en línea.

La importancia de este estudio es el de identificar cómo los estudiantes experimentan motivación intrínseca al aprendizaje en línea. Los datos recopilados nos ayudarán a mejorar nuestra escuela y métodos de enseñanza.

Su niño(a) no será penalizado(a) en ninguna manera si usted elige que él/ella no participe. La participación en este estudio es voluntaria y requiere el consentimiento del padre/madre y el/la estudiante.

La respuesta de los niños a los cuestionarios y entrevistas no impactará en ninguna manera sus notas escolares. La información, sin embargo, estará disponible a la aspirante al Doctorado Educacional, la Srta. Hermann, quien analizará la respuesta de los estudiantes antes y después de la finalización de los cuestionarios y entrevistas. Sólo la Srta. Hermann y su Supervisor Universitario tendrán acceso a la identidad de su niño(a) y a información asociada a la identidad de su niño(a). Los datos y documentación serán destruidos el 30 de Marzo del 2026.

Además, los participantes a la entrevista de estudiantes recibirán gratuitamente una nueva camiseta [REDACTED]. Si usted elige participar, por favor llene los formularios de Google adjuntos lo antes posible. Hay formularios adicionales para el permiso de grabar video y formularios de permiso de estudiantes para que usted y su hijo(a) completen.

Si usted tiene preguntas o le gustaría hablar con la Srta. Hermann, por favor contáctela a ella por teléfono al [REDACTED] o correo electrónico: [REDACTED]. Este es un proyecto emocionante, y espero poder moverlo hacia adelante.

Por favor llene los siguientes formularios: [Formulario de Participación](#)

Gracias por su apoyo.

Sinceramente,

[REDACTED]

Por favor marque la casilla apropiada a continuación y firme el formulario:

CONSENTIMIENTO PATERAL INFORMADO:

Yo doy permiso para que mi niño(a) participe en el estudio y que sus datos sean utilizados en el estudio. Yo he leído y entiendo este formulario. Si ☐ o No ☐ Yo no doy permiso para que mi niño(a) participe en este estudio. Si ☐ o No ☐

VIDEO/AUDIO/FOTOGRAFÍA:

Yo entiendo que esta investigación será Grabada por Video Si ☐ o No ☐ Yo doy permiso para que mi niño(a) sea Grabado por Video Si ☐ o No ☐

Nombre del Estudiante: _____

Firma del Padre/Guardián: _____

Nombre Impreso del Padre/Guardián: _____

Fecha: _____

Appendix E: Parent Informed Consent for Photography/Video/Audio Use

PARENT INFORMED CONSENT FOR PHOTOGRAPHY/VIDEO/AUDIO USE

Date _____

Dear Parent(s) and/or Guardian(s):

As part of this research project, I will be making a videotape recording of your child during their participation in the Zoom interviews. Please indicate what uses of this videotape audiotape you are willing to consent to by initialing below. You are free to initial any number of spaces from zero to all of the spaces, and your recording will no way affect your child's credit for participation. We will only use the videotape in way that you agree to. In any use of this videotape, your child's name would not be identified. If you do not initial any of the spaces below, videotape will be destroyed.

Please initial, sign, and date consent permitted.

The photograph/videotape/audiotape can be studied by the research team for use in the research project.

Please initial _____

I have read the above description and give my consent for the use of the videotape as indicated above.

Signature: _____ Date: Printed Name: _____

VIDEO/AUDIO/PHOTOGRAPH:

I understand this research will be Video Recorded Yes ☐ or No ☐

I give permission for my child to be Video Recorded Yes ☐ or No ☐

Consentimiento de Participación en la Investigación del Estudiante

Por favor responda a cada una de las siguientes preguntas.

* Required

1. Le doy permiso a mi hijo(a) a que participe en el estudio y que sus datos sean utilizados en el estudio.

Check all that apply.

- ☐ Si
☐ No

2. Yo entiendo que esta investigación va a ser grabada en video y doy mi permiso para que mi niño(a) sea grabado(a) en video.

Check all that apply.

- ☐ Si
☐ No

3. Primer Nombre y Apellido del Estudiante

4. Nivel de Grado del Estudiante *

5. Firma y Nombre Impreso del Padre o Guardián *

Appendix F: Parent Informed Consent for Photography/Video/Audio Use (Spanish)

CONSENTIMIENTO PATERNAL INFORMADO PARA USO DE FOTOGRAFÍA/VIDEO/AUDIO

Fecha _____

Estimado(s) Pare(s) y/o Guardián(es)

Como parte de este proyecto de investigación, yo estaré haciendo una grabación en video de su niño durante su participación en las entrevistas de Zoom. Por favor indíquenos que usos de estas grabaciones de video/audio a los que usted desea dar consentimiento al colocar sus iniciales a continuación. Usted tiene la libertad de colocar su inicial en cualquier número de espacios, desde cero hasta todos los espacios, y su grabación no afectará en ninguna manera el crédito del niño(a) por su participación. Nosotros solo usaremos la grabación de video en una manera que usted esté de acuerdo. En cualquier uso de este video, el nombre de su niño(a) no será identificado. Si usted no coloca las iniciales en cualquiera de los espacios a continuación, la grabación será destruida.

Por favor coloque sus iniciales, firme y coloque la fecha al consentimiento permitido.

La fotografía/video/audio puede ser estudiado por el equipo de investigación para el uso en el proyecto de investigación.

Coloque sus iniciales _____

Yo he leído la descripción anterior y doy mi consentimiento para el uso de video como se indica anteriormente.

Firma: _____ Fecha: _____

Nombre Impreso: _____

VIDEO/AUDIO/FOTOGRAFÍA:

Yo entiendo que esta investigación será Grabada por Video Si ☐ o No ☐

Yo doy permiso para que mi niño(a) sea Grabado por Video Si ☐ o No ☐

Appendix G: Parent Permission & Minor's Assent Letter

PARENT PERMISSION & MINOR'S ASSENT

Dear Kindergarten, 1st, 2nd, 3rd, 4th, 5th, & 6th Grade Students,

I am doing a study to learn about student motivation in learning online. I am asking for your help because I want to hear what you think about learning online. It is important for teachers to ask students about their thoughts on learning to help them become better teachers.

If you agree to be in this research study, you will complete a two-part survey with 22 questions on one survey and 21 questions on the other. It will take about 25 minutes to complete. This survey will be taken on your iPad on Zoom in a breakout room, during school hours with me in groups of 5 students. Your teacher will not be present in the breakout room, and your individual answers will not be shared with your teacher or principal.

You can ask questions about the survey or study at any time. If you decide at any time to not finish the survey, you can stop.

The questions will be only what you think and your opinions. There are no right or wrong answers because this is not a test.

If you sign this paper, it means that you have read this and that you want to be in the study. If you don't want to be in the study, don't sign this paper. Being in the study is up to you and no one will be upset if you don't sign this paper or if you change your mind later.

Thank you,

Miss Hermann
Intervention Teacher

I certify that I have read the student assent letter instructions to my child and grant permission for them to sign this form.

Child's Name _____

Parent's or Guardian's Name (Print) _____

Parent or Guardian Signature _____ Date _____

Student Signature: _____ Date _____

Student Printed Name: _____

Student Participation Consent Form

Dear Kindergarten, 1st, 2nd, 3rd, 4th, 5th, & 6th Grade Students,

I am doing a study to learn about student motivation in learning online. I am asking for your help because I want to hear what you think about learning online. It is important for teachers to ask students about their thoughts on learning to help them become better teachers.

If you agree to be in this research study, you will complete a two-part survey with 22 questions on one survey and 21 questions on the other. It will take about 25 minutes to complete. This survey will be taken on your iPad on Zoom in a breakout room, during school hours with me in groups of 5 students. Your teacher will not be present in the breakout room, and your individual answers will not be shared with your teacher or principal.

You can ask questions about the survey or study at any time. If you decide at any time to not finish the survey, you can stop.

The questions will be only what you think and your opinions. There are no right or wrong answers because this is not a test.

If you sign this paper, it means that you have read this and that you want to be in the study. If you don't want to be in the study, don't sign this paper. Being in the study is up to you and no one will be upset if you don't sign this paper or if you change your mind later.

Thank you,

Miss Hermann

I certify that I have read the student assent letter instructions to my child and grant permission for them to sign this form.

* Required

Student Information

1. Parent's or Guardian's First and Last Name

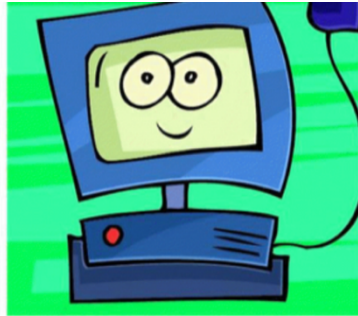
2. Parent or Guardian Signature *

3. Student Signature, First and Last Name *

This content is neither created nor endorsed by Google.

Google Forms

Appendix H: Survey Questionnaire



Online Learning Survey

Welcome to My Survey

Thank you for participating in my survey. Your feedback is important.

The goal of this study is to explore what motivates students to learn online. This survey will measure intrinsic motivation. Intrinsic motivation is the level a person engages in an activity solely for enjoyment or satisfaction.

This research is important because it could help our school discover what motivates students to learn in their online classes. This information could help our school to create more ways to engage and motivate students to learn.

This survey contains **2 pages** described here:

Page 1 includes 4 questions about demographics, which means information about you. Question 1 asks you to type your name, and the other 3 questions have multiple-choice answers. Questions 5-25 are statements assessing your motivation to learn online. A 7-point scale follows each statement for you to choose how true the statement is for you. Questions 26 and 27 ask you to type a response.

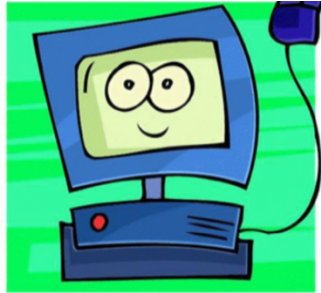
Page 2 includes numbers 1-23 with more statements about motivation, with the same 7-point scale as page 1. Numbers 24 and 25 ask you to type a response.

All of your responses will be kept private and will only be used for this study. At any time during the survey, you may choose not to answer a question, and you may stop participating in the survey at any time. If you change your mind after you turn in the survey and want it not to be used, please let me know, and I will destroy it.

Remember: This study is optional, and your choice to participate. If you wish to participate in this survey, please continue to the next page.

Thank you for your time and participation!

Miss Hermann



Online Learning Survey

Online Learning Intrinsic Motivation Inventory (OLIMI)

Please type your name on number 1 and then click on one bubble to answer questions 2 through 4.

For numbers 5 through 25, for each statement please indicate how true it is for you, using the scale.

For numbers 26 and 27, please type your answer.

* 1. Type your first and last name. ☞ 0

* 2. What is your gender? ☞ 0

- ☐ Boy
 ☐ Girl
 ☐ Other
 ☐ Prefer not to respond.

* 3. How old are you? ☞ 0

- ☐ 7 years old
 ☐ 8 years old
 ☐ 9 years old
 ☐ 10 years old
 ☐ 11 years old
- ☐ 12 years old
 ☐ 13 years old
 ☐ Prefer not to respond.

* 4. What grade level are you in this year? 🗑 0

- ☐ Kindergarten
 ☐ First Grade
 ☐ Second Grade
 ☐ Third Grade
 ☐ Fourth Grade
☐ Fifth Grade
 ☐ Sixth Grade
 ☐ Prefer not to respond.

* 5. While working online I was thinking about how much I enjoy it. 🗑 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 6. I do not feel at all nervous about learning online. 🗑 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 7. I feel that it is my choice to learn online. 🗑 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 8. I think I am pretty good at learning online. 🗑 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 9. I find online learning very interesting. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 10. I feel tense while learning online. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 11. I think I do pretty well at learning online, compared to other students. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 12. Learning online is fun. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 13. I feel relaxed while learning online. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 14. I enjoy learning online very much. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 15. I did not really have a choice about learning online. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 16. I am satisfied with my performance with learning online. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 17. I feel anxious while learning online. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 18. I think learning online is very boring. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 19. I feel like I am doing what I want to do while I am learning online. 🗨 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 20. I feel pretty skilled at learning online. 🗨 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 21. I think learning online is very interesting. 🗨 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 22. I feel pressure while working online. 🗨 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 23. I feel like I have to learn online. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 24. I would describe learning online as very enjoyable. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 25. I learn online because I have no choice. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 26. After learning online for a while, I feel pretty competent. 🗣 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

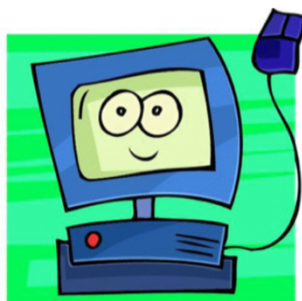
(If you prefer not to respond type NO here.)

* 27. What motivates you to do your schoolwork learning online?

(If you prefer not to respond type NO here.) 🗣 0

* 28. What do you like most about learning online?

(If you prefer not to respond type NO here.) 🗣 0



Online Learning Survey

Basic Psychological Needs Satisfaction in Online Learning (BPNS-OL)

For numbers 1 through 21, for each statement please indicate how true it is for you, using the scale.

For numbers 22 and 23, please type your answer.

* 1. I feel like I am free to decide for myself how to learn in school. 🗨 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 2. I really like the people I interact with in class. 🗨 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 3. Often, I do not feel very skilled in class. ☹ 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 4. I feel pressured learning online. ☹ 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 5. People I know tell me I am good at learning online. ☹ 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 6. I get along with people I come in contact with in my class. ☹ 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 7. I pretty much keep to myself and don't have a lot of social contacts. ☹ 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 8. I generally feel free to express my ideas and opinions in class. ☹ 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 9. I consider the people I regularly interact with in class to be my friends. 🗣️ 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 10. I have been able to learn interesting new skills recently. 🗣️ 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 11. In my daily classes, I frequently have to do what I am told. 🗣️ 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 12. People in my class care about me. 🗣️ 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 13. Most days I feel a sense of accomplishment from learning online. 🗣️ 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 14. People in class I interact with on a daily basis tend to take my feelings into consideration. 🗣️ 0

Not at all true.				Somewhat true.				Very true.
☐	☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 15. In class, I do not get much of a chance to show how capable I am. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 16. There are not many people that I am close to in class. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 17. I feel like I can pretty much be myself in my daily classes. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 18. The people I interact with regularly in class do not seem to like me much. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 17. I feel like I can pretty much be myself in my daily classes. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 18. The people I interact with regularly in class do not seem to like me much. 🗨 0

Not at all true.							Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 19. I often do not feel very capable in class. 🗨 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 20. There is not much opportunity for me to decide for myself how to do things in my daily classes. 🗨 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

(If you prefer not to respond type NO here.)

* 21. People are generally pretty friendly towards me in class. 🗨 0

Not at all true.				Somewhat true.			Very true.
☐	☐	☐	☐	☐	☐	☐	☐

* 22. Why do you complete assignments for your online class?

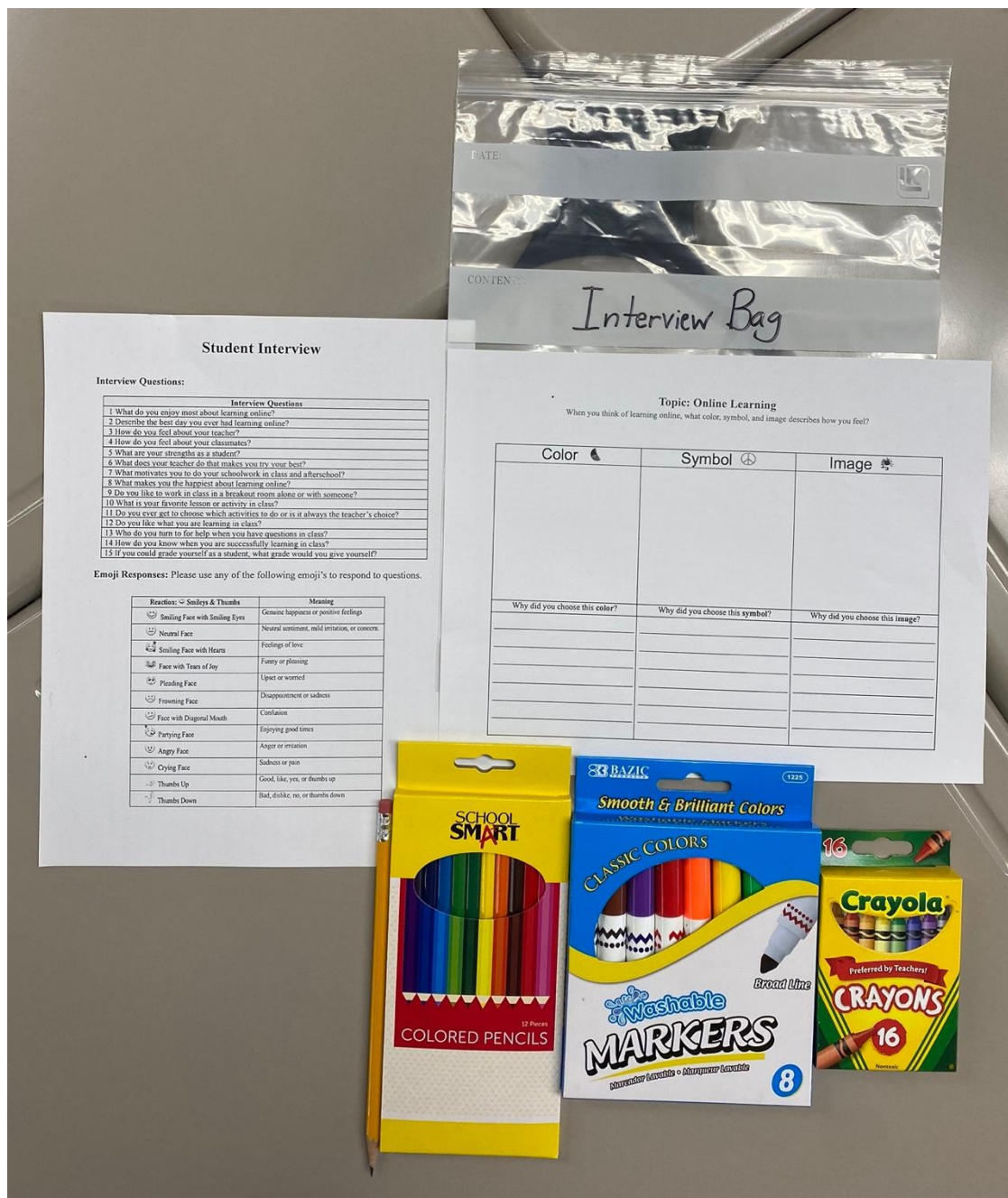
(If you prefer not to respond type NO here.) 🗨 0

* 23. What makes you feel successful learning in your online class?

(If you prefer not to respond type NO here.) 🗨 0

Appendix I: Interview Bag





Appendix J: CSI Artifact Student Sample

Topic: Online Learning

When you think of learning online, what color, symbol, and image describes how you feel?

Color 🌈	Symbol ☮️	Image 🖼️
 yellow		
Why did you choose this color?	Why did you choose this symbol?	Why did you choose this image?
I chose this color because to me yellow means happiness.	I feel calm at this school. I feel calm because every one is so nice.	This is how I feel about this school. Because I always come into class with a smile.