Exploring Adaptation of Schemas in Japanese Language Learning's Online Presence

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ABSTRACT

The increasing reliance on online education has transformed the learning experience, requiring students to adapt their learning practices in online contexts. Using Piaget's adaptation theory and the Community of Inquiry framework, the study investigates how teaching, social, and cognitive presence affect learning efficiency. This study used a quantitative methodology, collecting data from 226 respondents using 5 Likert-scale surveys and is rooted from Piaget (1985) and Garrison et al., (2007). The survey was answered by undergraduates from Malaysia public universities who are learning Japanese as foreign language. There are four sections: demographic profile with two items and 34 items on teaching presence, social presence and cognitive presence. The findings show that teaching, social, and cognitive presence have a significant effect on student engagement and learning outcomes. Educators should enhance students' achievement and satisfaction through providing structured guidance and interactive strategies online

Keywords: online presence, schema adaptation, online learning, Japanese language

INTRODUCTION

Background of Study

The increasing trend toward online education and the difficulties teachers and students encounter in adapting to online learning environments has been discussed among researchers. Online presence has a big impact on students' involvement and comprehension as educational institutions move from traditional classrooms to virtual platforms (Rahim et al., 2023). In virtual classrooms, many students struggle to stay motivated, engaged, and using effective learning techniques. This raises critical issues on how learners modify their cognitive approaches to adapt successfully in an online learning environment.

It is important to evaluate the dynamics of teaching, social presence, and cognitive presence in order to ensure successful online education. One instrument that can measure these factors and provide insight into how they relate to schema adaptation for learners in the present scenario is the ODL-Community of Inquiry Survey Instrument. Schema adaptation is the term used to describe how students adjust their previous knowledge and learning frameworks in order to accommodate new information.

The Community of Inquiry framework, which highlights the significance of teaching, social, and cognitive presence in creating an effective online learning environment; schema adaptation, which is based on Piaget's theory and describes how learners restructure their understanding to integrate new knowledge (Piaget, 1985) and online presence, which describes how actively learners engage and interact in online environments. By looking at these components, one can gain important knowledge about how students use online learning and create plans to improve their learning results.

Statement of Problem

The boundless use of digital technologies nowadays, particularly websites, social networking platforms and online learning environments (e.g., synchronous, asynchronous, blended, LMS or MOOC), has opened up new

perception, motivation and learning strategies for language learners to engage with the target language and culture (Sharakami et el., 2013; Melkonyan & Matevosyan, 2020). The crucial aspect of online presence is the concept of social presence, which refers to the ability of learners to project themselves into an online environment and establish meaningful connections with their peers and instructors (Mykota, 2022). Sharakami et al. (2013) stated that the interactive nature of online platforms can encourage language learners to actively participate in conversations, practice their communication skills, and receive immediate feedback from their peers or language instructors. Moreover, the availability of online resources, such as language-learning apps, educational videos, and online language courses, can supplement traditional classroom-based instruction and provide learners with personalized and flexible learning opportunities.

However, language learning is a complex process that involves the acquisition and development of various linguistic skills: speaking, listening, reading, and writing. According to Rahim et al. (2021), learners who participated in online classes have varying opinions regarding the effectiveness of their education through online platforms. further discussed that students are still struggling with online learning and some even argued that online learning is not their choice of learning. Curelaru et al. (2022) found that a lack of experience with blended learning resulted in low teaching presence, which led to perceptions of poor social presence and overall academic quality. There is a significant decrease in students' social presence, a sense of belonging, and emotional connection, which worsened learning quality and efficiency due to technical issues (Rahim et al., 2021). Conrad et al. (2022) study also showed that students' experience with online learning can be negatively influenced by information overload, perceived technical skill demands, and qualitative evidence indicating that limited social interaction, class format, and unclear communication also impacted perception of their learning. These may not align with the self-directed, asynchronous, and technology-mediated nature of online learning, leading to frustration and reduced learning effectiveness

Despite the role of online presence in various aspects of language education has become increasingly significant, online language learning still faces challenges for language assimilation, accommodation and equilibrium. This research aims to investigate these challenges and explore how learners adapt their language learning schemas to the online environment. It will examine the role of teaching, social and cognitive presence differences in this adaptation process.

Research Questions

This study is done to explore perception of learners on online presence. Specifically, this study is done to answer the following questions;

- How do learners perceive assimilation in online learning?
- How do learners perceive accommodation in online learning?
- How do learners perceive equilibration in online learning?
- Is there a relationship between all factors in online learning?

LITERATURE REVIEW

The Relation between Adaptation Theory and Online Learning

Adaptation Theory was introduced by Piaget (1952) where cognitive development is seen as an adaptation (or adjustment) mechanism. Adaptation theory is a core process in his Cognitive Development theory but both cannot be said to have similar concepts. Piaget (1952) argued that cognitive development occurs through assimilation, accommodation, equilibration, and disequilibrium. Assimilation happens when new information is tailored into current knowledge while accommodation happens when current knowledge is adjusted to integrate new knowledge. On the other hand, equilibration can be achieved when explanation can be made on what is observed using available knowledge. In contrast, disequilibrium occurs when the available knowledge could not comprehend new information.

However, Piaget (1952) mainly discussed Adaptation theory in the perspective of psychology and childhood development. In recent technological developments in the learning and teaching field, more scholars discussed this theory to examine online learning and discovered that Piaget's approach can be implemented into online learning as well as used to explain how learners obtain new information. One such scholar is McLelland (2024) who looked into the relationship between Piaget's theory and technology. McLelland (2024) discovered that the adaptation of knowledge that is being used by children can be demonstrated to educators through observation of children utilising online tools and the processes involved to achieve desired outcome. In addition, McLelland (2024) argued technology aids children in learning how things work and how they affect the world, parallel to Piaget's idea that children gain knowledge by interacting with their environment.

Another scholar is Kaplan (2018) who studies the application of Piagetian theory in the online training of teachers. Kaplan (2018) developed a module that teaches Piagetian theory by using the concept in Piagetian theory. In his study, twentyone teachers in training were given the Critical Thinking in Teaching and Learning online course Piaget Module and were tested using various activities that required online submission in digital word or web format. He discovered that the participants understand how vital designing activities that encourage exposure and interaction as well as how significant creating an environment that develops schemas (mental structure) and assess students' understanding to support assimilation and accommodation in learning.

The mentioned scholars had concluded how crucial the design and environment (online) of knowledge to a learner in building the learners' schemas. The knowledge involved is not only theoretical knowledge but also an overall information that involves prior knowledge, real-life experiences, and new technological ideas. The scholars also discussed that Piaget's theory played a prominent role in demonstrating how the adaptation of knowledge occurs and what framework to use when designing online learning tools.

The Relation between Adaptation Theory and Online Learning

Social presence, cognitive presence and teaching presence were identified by Garrison et al. (2007) as the three types of presence that are vital for a conducive online learning environment. Garrison et al. (2007) argued that these presence are elements under the community of inquiry framework which was developed by Garrison et al. (2007) to provide structure and principle to the complexity of online learning. Social presence is defined as the extent to which the other person is noticeable in the interaction and the resulting significance of the interpersonal relationships (Gunawardena et al., 1997; Short et al., 1976). Meanwhile, cognitive presence is defined as the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry (Garrison et al., 2001; Garrison et al., 2000). On the other hand, teaching presence is described as the planning, guidance, and management of cognitive and social processes to achieve personally meaningful and educationally valuable learning outcomes. (Garrison et al., 2001; Garrison et al., 2000).

Recent scholar on this matter has revealed that there is a positive relationship between these presences and online learning. This positive relationship encouraged an efficient online learning environment. Rahim et al. (2023) examined what are students' views and perceptions of their cognitive, teaching, and social presence in an online learning environment. This study collected data from 169 participants who were given to a four –part survey. Rahim et al. (2023) discovered that there is an important connection between cognitive, teaching, and social presence in online learning. This connection encouraged the development of a conducive and positive online learning environment for students. Rahim et al. (2023). discussed that content related questions can be resolved through brainstorming as well as searching for relevant information.

Similarly, Abidin et al. (2023) also studied the association of teaching, cognitive presence and social presence within online learning. However, Abidin et al. (2023) has collected data from 100 participants who responded to a survey adapted from Arbaugh et al. (2008). The data shows that online learning environments need a balance of teaching, cognitive presence, and social presence to encourage efficient learning. Abidin et al. (2023) also argued that a positive online learning environment depends heavily on the presence of instructors as facilitators.

Chi (2023), using the community of inquiry (COI) theory, built a research framework based to investigate the connection between three types of MOOC (Massive Open Online Course) presence (teaching presence, social presence, and cognitive presence) with learning engagement. 794 college students between the ages of 18 and 20 years old responded to the COI survey instrument, short grit scale, the Utrecht work engagement scale-student scale and academic self-regulation questionnaire. Learning engagement has a supportive connection with all three MOOC presences (teaching presence, social presence, and cognitive presence), namely teachers' presence in Chi (2023) argued that instructors' involvement is vital in creating an encouraging MOOC environment by providing its instructional design and guidance.

The discussed researchers discovered that social presence, cognitive presence and teaching presence have a significant relationship with online learning. This favourable relationship can build an effective online learning environment for both learners and instructors. However, these researchers have also highlighted the crucial role played by the instructors as the designer and also facilitators of the online courses involved.

Both adaptation theory and presences in online learning agreed how vital an conducive and supportive online learning environment is. An efficient online learning environment allows learners to gain knowledge as well as communication skills beyond the course contents. In addition, both also agree on the prominent roles of instructors from designing the online courses to aiding the online classes.

Past Studies on Types of Presence in Online Learning

Previous research on the different types of presence in online learning consistently highlights the significance of cognitive, social, and teaching presences in fostering effective and engaging learning experiences.

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Garrison et al. (2000) aimed to develop a comprehensive framework to understand the nature and components of online educational experiences. Through qualitative analysis, they reviewed online discussion transcripts from a group of graduate students. Their findings highlighted three essential elements of online learning: cognitive presence, social presence, and teaching presence. Cognitive presence refers to the extent to which learners can construct and confirm meaning through sustained reflection and discourse. Social presence is the ability of participants to identify with the community, communicate purposefully in a trusting environment, and develop interpersonal relationships. Teaching presence involves the design, facilitation, and direction of cognitive and social processes to achieve meaningful learning outcomes. The researchers emphasized that balancing these three types of presence is crucial for creating a meaningful online learning experience.

Similarly, Shea & Bidjerano (2009) explored the relationship between students' perceived presence (cognitive, social, and teaching) and their sense of learning community and success in online learning environments. Through a quantitative research design, they utilized the Community of Inquiry (COI) survey to gather data from a sample of 316 online learners. Their structural equation modelling analysis revealed that all three types of presence were significantly related to students' sense of learning community and their perceived learning outcomes. Teaching presence emerged as a strong predictor of students' sense of community, suggesting that enhancing teaching presence in online courses can lead to a stronger sense of community and improved learning outcomes for students.

Ice et al. (2007) investigated the impact of instructor audio feedback on students' perceptions of presence in online courses through a mixed-methods approach. Using surveys and interviews, they collected data from 138 online learners. Their thematic and statistical analysis indicated that students reported higher levels of perceived teaching presence and satisfaction with the course when they received audio feedback from instructors. Audio feedback was perceived as more personal and engaging compared to written feedback,

highlighting the potential benefits of incorporating audio feedback in online courses to enhance teaching presence and improve student satisfaction.

In conclusion, past studies on types of presence in online learning consistently demonstrate the importance of cognitive, social, and teaching presences in creating effective and engaging learning environments. These studies emphasize the interconnectedness of these presences and suggest that understanding and fostering them can significantly enhance learners' engagement and overall learning experience. Enhancing teaching presence, through various means such as audio feedback, can lead to a stronger sense of community and better learning outcomes. By drawing on these studies, it becomes evident that integrating principles of social interactionism, effective learning strategies, and balanced language instruction can create a comprehensive approach to language learning, ultimately supporting learners in achieving their linguistic goals.

Conceptual Framework

One main indication of successful learning is the ability of the learner to be adaptable. In times of online learning, adaptability is seen in two ways. One way is being adaptable to receive new knowledge and the second way is adaptable to accept knowledge in a different way. The acquisition of knowledge is not just from a classroom. Figure 1 presents the conceptual framework of the study. This study extends the concept of adaptation of schemas by Piaget (1985) onto the concept of online learning. The concept of adaptation is then scaffolded to merge with Garrison & Arbaugh's (2007) concept of interaction in online learning; teaching, social and cognitive presence.

According to Piaget's (1985) adaptation of schema in online presence states that successful learning involves learners going through three stages and they are (a) assimilation, (b) accommodation and (c) equilibration. Similarly, in online learning, learners learn by assimilation. Good teaching presence can help learners assimilate their current knowledge to the new knowledge.

Past findings revealed that learners need more than just teachers' presence to facilitate learning (Rahim et al., 2021). They need positive experience to make learning meaningful. This is achieved through the accommodation process done through social presence of the learner. This is usually done through interaction with their peers or people around them. When learning is successful, learners can understand the new knowledge with their existing knowledge- this stage is known as equilibration. This stage is facilitated when learners are able to interact with the learning materials through cognitive presence.

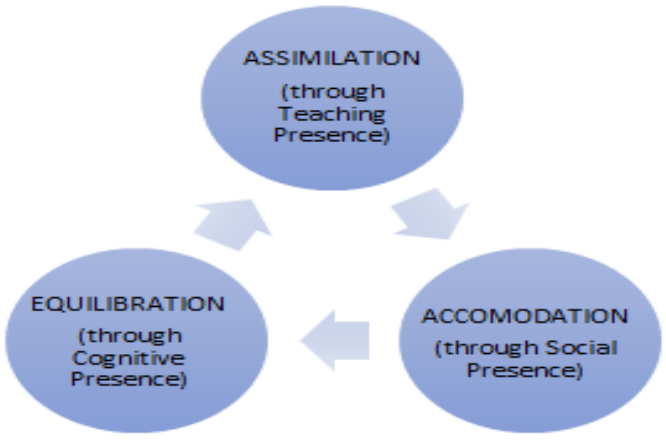

Fig. 1 Conceptual Framework of the Study-Adaptation of Schemas in Online Presence

METHODOLOGY

This quantitative study is done to explore motivation factors for learning among undergraduates. A purposive sample of 226 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted from Piaget (1985) and Garrison et al. (2007) to reveal the variables in table 1 below. The survey has 4

sections. Section A has items on demographic profile. Section B has 13 items on teaching presence. Section C has 9 items on social presence. Section D has 12 items on cognitive presence.

Table 1 Distribution of Items in the Survey

SECTION	COMPONENT IN ADAPTATION (Piaget, 1985)	TYPE OF PRESENCE	NO OF ITEMS	CRONBACH 'S ALPHA
B	ASSIMILATION	TEACHING	13	.968
C	ACCOMODATION	SOCIAL	9	.933
D	EQUILIBRATION	COGNITIVE	12	.967
B	ASSIMILATION	TEACHING	13	.968
TOTAL			34	.976

Table 1 also shows the reliability of the survey. The analysis shows a Cronbach alpha of .968 for Assimilation, .933 for Accomodation and .967 for Equilibrium. The overall Cronbach alpha for all 34 items is .976; thus, revealing a good reliability of the instrument chosen/used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

FINDINGS

Findings for Demographic Profile

Table 2 Percentage for Q1 - Gender

NO	ITEM	PERCENTAGE
1	Male	35%
2	Female	65%

Table 2 illustrates the percentage for Q1-Gender. The percentage for females is 65%, while the percentage for male is 35%. This indicates a significant gender imbalance where the majority of the respondents are females.

Table 3 Percentage for Q2 - Faculty

NO	ITEM	PERCENTAGE
1	Science & Technology	61%
2	Social Sciences & Humanities	39%

Table 3 shows the percentage for Q2-Faculty. The highest percentage is Science & Technology, 61%, while the percentage for Social Sciences & Humanities is 39%. This indicates that most of the respondents are associated with the Science & Technology faculty, which may influence the study's findings.

Findings for Assimilation

This section presents data to answer research question 1- How do learners perceive assimilation in online learning? In the context of this study, this is measured by teaching presence and is sub-categorized by (i) design & organization, (ii) facilitation, and (iii) direct instruction.

Table 4 Mean For (I) Design & Organisation

ITEM	MEAN	SD
TPQ 1 The instructor clearly communicated important course topics.	4.6	.63071
TPQ 2 The instructor clearly communicated important course goals.	4.6	.60870
TPQ 3 The instructor provided clear instructions on how to participate in course learning activities.	4.6	.60136
TPQ 4 The instructor clearly communicated important due dates/time frames for learning activities.	4.6	.59528

Table 4 presents the mean value for Design and Organisation. All the 4 items, TPQ1, TPQ2, TPQ3, TPQ4 have a high mean of 4.6. This shows that the respondents agree that the instructor provided a clear instruction about course topics and goals, learning activities and important dates/time frames for each learning activity.

Table 5 Mean For (II) Facilitation

ITEM	MEAN	SD
TPQ 5 The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.	4.5	.60390
TPQ 6 The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.	4.6	.58525
TPQ 7 The instructor helped to keep course participants engaged and participating in productive dialogue.	4.6	.59218
TPQ 8 The instructor helped keep the course participants on task in a way that helped me to learn.	4.6	.62262
TPQ 9 The instructor encouraged course participants to explore new concepts in this course.	4.5	.58865
TPQ 10 Instructor actions reinforced the development of a sense of community among course participants.	4.5	.63396

Table 5 presents the means for facilitation. The highest mean score of 4.6 on items: TPQ6, TPQ7, TPQ8, indicates that the respondents agree that the instructor was helpful in guiding students to learn, engaging and understanding the course topics. Meanwhile, a slightly lower mean score of 4.5 on items: TPQ5, TPQ9, TPQ10, show that the respondents agree that the instructor encouraged the students to explore new concepts, developed the sense of community and identified areas of agreement and disagreement on course topics.

Table 6 Mean For (Iii) Direct Instruction

ITEM	MEAN	SD
TPQ11 The instructor helped to focus discussion on relevant issues in a way that helped me to learn.	4.5	.59650
TPQ12 The instructor provided feedback that helped me understand my strengths and	4.5	.66780

weaknesses relative to the course's goals and objectives.		
TPQ13 The instructor provided feedback in a timely fashion.	4.5	.59813

Table 6 presents the mean for Direct Instruction. All 3 items: TPQ11, TPQ12, TPQ13 share the mean score of 4.5, indicate that the respondents agree that the instructor was helpful to the discussion on relevant issues, help learners to understand their strengths and weaknesses about their course, and provide feedback accordingly.

Findings for Accomodation

This section presents data to answer research question 2- How do learners perceive accommodation in online learning? In the context of this study, this is measured by social presence and is sub-categorized by (i) affective expression, (ii) open communication, (iii) and group cohesion.

Table 7 Mean For (I) Affective Expression

ITEM	MEAN	SD
SPQ1 Getting to know other course participants gave me a sense of belonging in the course.	4.2	.78826
SPQ2 I was able to form distinct impressions of some course participants.	4.2	.72141
SPQ3 Online or web-based communication is an excellent medium for social interaction.	4.3	.82875

Table 7 represents the mean for the item of Affective Expression. The highest mean score with 4.3 is SPQ3 where the students find online or web-based communication to be a great platform for social interaction. Whereas, SPQ1 and SPQ2 have the same mean score of 4.2. This shows that equal means of students are able to form clear impressions of some of the course students and find that a sense of belonging can be nurtured by knowing other students.

Table 8 Mean For (Ii) Open Communication

ITEM	MEAN	SD
SPQ4 I felt comfortable conversing through the online medium.	4.3	.82159
SPQ5 I felt comfortable participating in the course discussions.	4.3	.71677
SPQ6 I felt comfortable interacting with other course participants.	4.3	.75002

Table 8 demonstrates the mean for the items of Open Communication. All items have the same mean score of 4.3. This indicates that students feel similarly comfortable when communicating using online mediums. joining course discussion and socializing with other students.

Table 9 Mean For (Iii) Group Cohesion

ITEM	MEAN	SD
SPQ7 I felt comfortable disagreeing with other course participants while still maintaining a sense of trust	4.0	.93069
SPQ8 I felt that my point of view was acknowledged by other course participants.	4.2	.81535
SPQ9 Online discussions help me to develop a sense of collaboration.	4.3	.77352

Meanwhile, Table 9 shows the means for the items of Group Cohesion. The highest mean was acquired by SPQ9 where students find that the development of collaboration can be aided through online discussion. The second highest is SPQ8 where students discover that their opinion was recognized by other students. Finally, SPQ7 is the lowest with the mean score of 4.0. This shows that students feel the least comfortable with differing opinions with other students at the same time preserving the sense of trust.

Findings for Adaptation

This section presents data to answer research question 3- How do learners perceive equilibration in online learning? In the context of this study, this is measured by cognitive presence and it is sub-categorized by (i) triggering events, (ii) exploration, (iii) integration, and (iv) resolution.

Table 10 Mean For (I) Triggering Events

ITEM	MEAN	SD
CPQ1 Problems posed increased my interest in course issues.	4.2	.80245
CPQ2 Course activities piqued my curiosity	4.3	.71677
CPQ3 I felt motivated to explore content related questions.	4.3	.70061

Table 10 shows that the average responses for three items about triggering events in a course are quite high, with mean scores of 4.2 for items CPQ1 and mean score 4.3 for items CPQ2 and CPQ3. This suggests that the participants generally found the course engaging. Specifically, they felt that the problems posed increased their interest, the activities piqued their curiosity, and they were motivated to explore related questions. Overall, the course successfully stimulated interest, curiosity, and motivation among learners, indicating an effective and engaging learning experience.

Table 11 Mean For (Ii) Exploration

ITEM	MEAN	SD
CPQ4 I utilized a variety of information sources to explore problems posed in this course.	4.3	.70235
CPQ5 Brainstorming and finding relevant information helped me resolve content related questions.	4.3	.68023
CPQ6 Online discussions were valuable in helping me appreciate different perspectiv*es.*	4.3	.74924

Table 11 highlights that the uniform mean score of 4.3 across all items: CPQ4, CPQ5 and CPQ6 suggests that participants found the exploration activities in the course to be very effective. They engaged with a variety of information sources, found brainstorming and information-seeking to be helpful, and appreciated the different perspectives gained through online discussions. These findings underscore the value of diverse exploratory activities in enhancing learners' engagement and comprehension. Encouraging such practices can lead to a more enriching and effective learning experience.

Table 12 mean for (iii) integration

ITEM	MEAN	SD
CPQ7 Combining new information helped me answer questions raised in course activities.	4.4	.69819

CPQ8 Learning activities helped me construct explanations/solutions.	4.4	.68241
CPQ9 Reflection on course content and discussions helped me understand fundamental concepts in this class.	4.4	.67320

According to Table 12, the high mean scores of 4.4 for all items: CPQ7, CPQ8 and CPQ9 suggest that participants found the integration activities in the course to be highly effective. They benefited from combining new information, engaging in learning activities, and reflecting on course content and discussions. These findings highlight the value of integrative practices in enhancing learners' understanding, critical thinking, and problem-solving skills. Encouraging such integrative activities can lead to a deeper and more comprehensive learning experience.

Table 13 Mean For (Iv) Resolution

ITEM	MEAN	SD
CPQ 10I can describe ways to test and apply the knowledge created in this course.	4.2	.76630
CPQ11 I have developed solutions to course problems that can be applied in practice.	4.2	.76198
CPQ 12 I can apply the knowledge created in this course to my work or other non-class related activities.	4.3	.70772

Table 13 illustrates the mean scores for three items under the Resolution category, focusing on the application of course knowledge. CPQ12 has the highest mean score 4.3 which measures the ability to apply course knowledge to work or other non-class related activities. Meanwhile, CPQ10 and CPQ11 both scored 4.2, where participants rated their ability to describe ways to test and apply knowledge (CPQ10) and developing practical solutions to course problems (CPQ11). These results show that the course effectively supports the resolution and application of knowledge in both academic and real-world contexts.

Findings for Relationship between All Factors in Online Learning

This section presents data to answer research question 4- Is there a relationship between all factors in online learning?

To determine if there is a significant association in the mean scores between metacognitive, effort regulation, cognitive, social and affective strategies data is analyzed using SPSS for correlations. Results are presented separately in table 14, 15 and 16 below.

Table 14 Correlation between Assimilation and Accommodation

Correlations

		ASSIMILATION	ACCOMODATION
ASSIMILATION	Pearson Correlation	1	.644**
	Sig. (2-tailed)		.000
	N	226	226
ACCOMODATION	Pearson Correlation	.644**	1
	Sig. (2-tailed)	.000	
	N	226	226

**. Correlation is significant at the 0.01 level (2-tailed).

Table 14 shows there is an association between assimilation and accommodation. Correlation analysis shows that there is a high significant association between assimilation and accommodation (r=.644**) and (p=.000). According to (Jackson, 2015), coefficient is significant at the .05 level and positive correlation is measured on

a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between assimilation and accommodation.

Table 15 Correlation between Assimilation and Accommodation

Correlations

		ACCOMODATION	EQUILIBRIUM
ACCOMODATION	Pearson Correlation	1	.776**
	Sig. (2-tailed)		.000
	N	226	226
EQUILIBRIUM	Pearson Correlation	.776**	1
	Sig. (2-tailed)	.000	
	N	226	226

**. Correlation is significant at the 0.01 level (2-tailed).

Table 15 shows there is an association between accommodation and equilibrium. Correlation analysis shows that there is a high significant association between accommodation and equilibrium (r=.776**) and (p=.000). According to (Jackson, 2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between accommodation and equilibrium.

Table 16 Correlation between Equilibrium and Assimilation

Correlations

		EQUILIBRIUM	ASSIMILATION
EQUILIBRIUM	Pearson Correlation	1	.701**
	Sig. (2-tailed)		.000
	N	226	226
ASSIMILATION	Pearson Correlation	.701**	1
	Sig. (2-tailed)	.000	
	N	226	226

**. Correlation is significant at the 0.01 level (2-tailed).

Table 16 shows there is an association between equilibrium and assimilation. Correlation analysis shows that there is a high significant association between equilibrium and assimilation (r=.701**) and (p=.000). According to (Jackson, 2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between equilibrium and assimilation.

CONCLUSION

Summary of Findings and Discussions

This study investigated how learners view their online presence and how it relates to online learning schema adaptation. The results show that effective online learning experiences are greatly improved by teaching, social presence, and cognitive presence. In addition, the study supports Piaget's adaptation theory (1952), which says that learners modify their learning techniques through assimilation, accommodation, and balance. The interaction of these presences is essential for promoting students' motivation, engagement, and general learning objectives.

According to the findings, learners believe that teachers' presence is an important part of their educational process. Learners' assimilation of knowledge is greatly helped by timely feedback, systematic supervision, and clear disclosure of the course objectives. This is consistent with earlier research emphasizing the value of

facilitation and instructional design in online learning contexts (Rahim et al., 2023). Similarly, social presence became an essential part of online learning since students said they felt more involved when they could communicate with teachers and peers in a meaningful way. This is supported by research by Chi (2023), which highlights how well-integrated social and cognitive presences increase students' learning engagement.

Another important factor was cognitive presence, which involves problem-solving, research, and reflection. The study showed that students were likely to get a more comprehensive understanding of the course material if they participated in discussion boards and interactive exercises. The importance of critical thinking and knowledge creation during online learning was highlighted by Garrison et al., (2000), and this finding corresponds with their work. The strong connections between teaching, social presence, and cognitive presence support the idea that these factors need to be balanced in order to establish a favorable learning environment.

Pedagogical Implications and Suggestions for Future Research

In terms of pedagogy, these results indicate that teachers need to create classes that support each of the three forms of presence. Multimedia content, group activities, and interactive discussions are some strategies that can encourage engagement (Abidin et al., 2023). Providing students the chance to learn on their own can also help them become more independent and self-assured in an online environment.

Future studies should look into how an online presence affects learning results throughout the long run in a variety of fields of study. It may be beneficial to look into how various learning styles affect adaptation in online learning environments. Additionally, new technologies include virtual reality and artificial intelligence might improve internet visibility, which calls for greater research.

In conclusion, this study emphasizes how teaching, social presence, and cognitive presence are all interlinked in online learning. Teachers can create more successful online learning experiences and advance educational practices by having a better understanding of schema adaptation.

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