Tímarit um uppeldi og menntun / Icelandic Journal of Education | *34*(2), 2025, 21-43
ÁSTA B. SCHRAM | UNIVERSITY OF ICELAND
SIGURBJÖRG JÓHANNESDÓTTIR | UNIVERSITY OF ICELAND
https://doi.org/10.24270/tuuom.2025.34.8

STUDENTS' PERCEPTIONS OF CONNECTEDNESS AND TEACHER CARING IN THE ONLINE UNIVERSITY ENVIRONMENT

There is increasing research on strategies for fostering students' motivation online. However, a focus is lacking on the role of teacher caring and connectedness and how these motivational constructs develop in the online environment. Mixed methods were used to assess students' perceptions of connectedness and teacher caring and how the teacher's behavior related to these factors. Participants were 173 students in an asynchronous, online graduate course in public administration. A survey included a validated caring scale from the MUSIC Model of Motivation Inventory and single items. Students' perceptions of teacher caring were very strong. Data from focus groups, open questions, and a teacher interview cast a deeper light on the results. Course structures with quality material, clear directions, positive communication, support, and personal presence were influential. Students' sense of peer connectedness varied. Instructional strategies should be planned so that students perceive teacher caring, as this factor improves student motivation and learning.

Keywords: connectedness, relatedness, caring, motivation, online studies, higher education

INTRODUCTION

This study aimed to discover to what degree students perceived teacher caring and connectedness with other students in an online course at an Icelandic university and which factors influenced these perceptions. The perception of caring entails that students sense the instructor's respect, friendliness, willingness to assist, and care for their success (Jones, 2018). Studies have found that perceptions of instructor caring significantly predict student engagement, motivation, and achievement (Bergin & Bergin, 2009; Jones et al., 2021; Wentzel, 1997, 2022).

This caring construct, which is part of the MUSIC Model of Motivation, the theoretical framework used in this study, is built on research and theories of belonging and related-

ness (Jones, 2018). Experts who have studied the need to belong have discovered that most people need to perceive caring or relatedness for optimal well-being, including in the educational setting (Baumeister & Leary, 1995; Goodenow, 1992, 1993; Seifert & Bar-Tal, 2023). Baumeister and Leary (1995) describe two criteria for the need to belong: "First, there is a need for frequent affectively pleasant interactions with a few people, and second, these interactions must take place in the context of a temporally stable and enduring framework of affective concern for each other's welfare" (p. 497). Studies have indicated that a sense of belonging to a group and a positive connection with the course instructor enhances the learning experience both in face-to-face and online environments (Seifert & Bar-Tal, 2023; Sergiovanni, 1994; Zamora et al., 2023). The concept of relatedness is used in self-determination theory (SDT; Deci & Ryan, 2000; Noddings, 1992). SDT describes three psychological needs that, when met, contribute to motivation and achievement (Ryan & Deci, 2017). These are autonomy, competence, and relatedness. Relatedness refers to the affective and *emotional qualities* embedded in teacher-student interactions and their *feelings* and beliefs toward each other (Ryan & Deci, 2017). *Relatedness* is feeling *connected and belonging* with others. "Relatedness is supported when others are involved and show interest in the persons' activities, are empathic in responding to their feelings, and convey that the person is significant, cared for, and loved" (URMC Center for Community Health & Prevention, n.d.). A perception of relatedness with the teacher and fellow students creates a secure environment and increases motivation, which supports successful learning (Schunk et al., 2014). It is clear from these definitions that researchers in the field of educational psychology describe similar concepts in terms of belongingness, relatedness, and caring. Additionally, research has shown that perceiving social presence, which includes teachers' caring through expressed friendliness, respect, and support, and thus, a related construct, is an important motivational factor (Mazzolini & Maddison, 2007; Swan & Shih, 2005; Tao, 2009; Tu & McIsaac; 2002; Weaver & Albion, 2005). Social presence has been defined as a "student's sense of being in and belonging in a course and the ability to interact with other students and an instructor although physical contact is not available" (Picciano, 2002, p. 22). A more recent definition from Garrison (2011) describes it as the "ability of participants to identify with the group or course of study, communicate purposefully in a trusting environment, and develop personal and affective relationships" (p. 34). Both definitions share characteristics with definitions of relatedness and caring.

It may be more challenging for students to experience relatedness or a sense of belonging online (Zamora et al., 2023). For that feeling to develop, students need to interact with the instructor and fellow students and sense a caring environment through these interactions. Not many studies deal specifically with students' beliefs about how and why they perceive *teachers' caring* or *connectedness* with others in an online university course. Jones et al. (2012) found that prompt, friendly, encouraging and personalized email responses and frequent reminders gave students the impression that the teacher cared for them. Accessibility and flexibility added to this perception. About 10% of the participants in their study believed that it was impossible to perceive personal caring in a large online course. Most studies of social presence report a relationship to

student satisfaction or perceived learning but fewer to motivation, instructor behavior, and course design (Richardson et al., 2017). Those few have provided insight into how teachers' behavior could minimize students' feelings of isolation online. These teachers' actions include using students' names, praising them for successful performances, and showing attentiveness. These actions help build a social presence, minimizing disconnect between instructors and students online (Richardson et al., 2017).

Allen and Seaman (2014) define a course as an online course when at least 80% of the course content is delivered online, as face-to-face when zero to 29% is delivered online, and as blended (or hybrid) when 30-80% of the course content is delivered online. The definition includes both asynchronous (not occurring in real-time) and synchronous online content delivery. Online higher education studies in most parts of the world are on a constant rise, not least due to technological advancement and increasing access (Allen & Seaman, 2016; Seaman et al., 2018; Seifert & Bar-Tal, 2023). As online teaching and learning has increased, so has relevant research (Martin et al., 2020). Studies indicate that university students select online mode for several reasons (Valantinaité & Sederevičiuté-Paciauskiené, 2021). It can be a matter of necessity, convenience, or choice. Students mention aspects such as eliminating the factor of place and time, the independence involved, and information quality. University leaders increasingly realize the importance of including online options in the institution's long-term strategy for practical and financial reasons, e.g., less crowded classrooms, increased enrollments, and lower infrastructure costs (Allen & Seaman, 2017; Popovich & Neel, 2005). However, as online learning becomes increasingly common, educational institutions face new teacher-, student-, and institutional challenges. The effectiveness of online programs on student learning depends on many factors (Owens et al., 2009). It is of utmost importance to understand the various needs of online students to maximize the quality of their education (Aristovnik et al., 2023; Ericson Nolasco, 2022; Selvaraj et al., 2021). Student retention, for example, has generally been lower online, commonly blamed on the nature of the modality itself, but possibly due to the instructors' lack of skills in motivating students to engage in their learning (Simpson, 2013). During COVID-19, several instructors felt adapting to online teaching was a challenge, and the effect on many students was considerable (Lassoued et al., 2020). Administrators commonly, and perhaps understandably, lack the knowledge of online pedagogy, and consequently, teachers who are expected to adapt to teaching online may experience a lack of administrative support (Kentnor, 2015). Instructional development programs (IDPs) have been developed for instructors of both face-to-face and online modalities. However, there is limited general knowledge about the features that make such programs effective (Steinert et al., 2016). Much has been achieved, but the intricacies of teaching online and how teachers are best supported need to be studied in more detail.

According to Owens et al. (2009), student learning online can be affected by factors such as organization, content, the quality of relationships, and psychosocial factors. These are generally the same components as those influencing face-to-face programs, but solving some of these challenges in the online environment may require specialized strategies (Lassoued et al., 2020; Owens et al., 2009). Online courses require a considerable amount of motivation and self-regulation on behalf of the student, as the stu-

dent is responsible for staying on track. However, the attitude and actions of the teacher, as well as the course design, can make a striking difference to students' perceptions of motivational factors (Jones, 2018). Reasons related to students' lack of motivation, such as experiencing a lack of relatedness (an established motivational factor), have been a common contributor to attrition in online courses (Artino, 2008; Keller, 2008; Pineau, 2007; Willging & Johnson, 2004).

This study focuses on the factors involved in students' perceptions of caring and relatedness in the online environment. The research question was: To what extent did students perceive or experience teacher caring and connectedness with each other in an online, asynchronous course, and which factors influenced this perception?

Theoretical framework

The MUSIC® Model of Motivation is used as the framework for this study. Moore's pedagogical framework (somewhat dated but still valid) is also discussed as it explains and emphasizes interactions in distance learning (Moore, 1989). The MUSIC Model particularly considers the perception of *caring* in the motivational climate. The caring component stipulates that students must experience caring interpersonal relationships in their study environment to be motivated. As mentioned above, this inference is based on research on the theoretical concepts of belongingness, relatedness, and connectedness from self-determination theory and theories of belonging (Baumeister & Leary, 1995; Jones & Wilkins, 2013; Ryan & Deci, 2000). One perceives a sense of caring when respect, helpfulness, friendliness, and care about one's success is portrayed (Jones, 2018).

In the field of educational psychology, motivation is commonly defined as "the process whereby goal-directed activity is instigated and sustained" (Schunk et al., 2014, p. 5). Many studies have identified motivation as a strong predictor of success (e.g., Paas et al., 2005; Stevens & Switzer, 2006; Whipp & Chiarelli, 2004). Motivated students engage in their studies and generally succeed. Through the years, several motivation theories have developed, e.g., self-determination (Deci & Ryan, 2000), expectancy-value (Wigfield & Eccles, 2000), interest (Hidi & Renninger, 2006), and achievement goal theories (Pintrich et al., 2003). Having studied these theories and related research, Jones (2009, 2018) designed the MUSIC® Model of Motivation to make this knowledge more accessible to educators. It includes five components that motivate students to engage in their studies. The name is an acronym based on the first/second letter sound of each component: eMpowerment (M), Usefulness (U), Success (S), Interest (I), and Caring (C). The first, eMpowerment, refers to students' perception of autonomy, e.g., having some choices. The Usefulness factor points to students' belief in the usefulness of their studies. Success refers to students' expectations of success. The interest component encompasses students' situational interests, and finally, the caring factor deals with students' perception of teacher caring (personal or academic). Jones (2018) emphasizes that courses need to be so designed that students experience empowerment (autonomy), usefulness (value), a feeling of success (confidence), situational interest, and teacher's caring (relatedness). He developed the MUSIC Model of Academic Motivation Inventories (MMAMI), validated in several languages and settings (Jones, 2024; Parkes et al., 2015). The results

have been used in face-to-face and online courses to evaluate students' motivation and guide educators in improving their courses (see Jones et al., 2022).

In his pedagogical framework, Moore (1989) emphasizes three student interactions that must be considered in designing a distance education course: Student-peer, student-instructor, and student-content. Student-peer interaction usually happens in student-managed groups where students have some autonomy. This design fits adult learners well, as they can self-regulate better than younger students. The development of student-instructor interaction depends significantly on the teacher's ability to participate and engage students in activities and course design. Finally, the student interacts with the course content by studying, relating the content to prior knowledge, creating meaning, and developing understanding and perspectives. The way the course is organized can influence the success of this interaction. Students' satisfaction and motivation in the online environment and their achievements are positively influenced when these factors are integrated into the course design (Bernard et al., 2009).

There is considerable research on strategies fostering students' motivation online. However, a focus has been lacking on teacher caring and connectedness as well as factors affecting the development of these constructs (Richardson et al., 2017; Tao, 2009). This study is designed to add to this knowledge.

METHOD

A sequential, explanatory mixed methods design was employed, starting with a student survey, followed by student focus groups and a teacher interview, and finally repeating the survey for another cohort of students with additional open-ended questions (Creswell & Plano Clark, 2017). The quantitative data from both surveys were analyzed as one data set. Adding more participants gave the results more weight. The organization of the course was the same; so was the instructor.

Setting

The course was an asynchronous (no real-time), online course, six ECTS units (European Credit Transfer and Accumulation System), part of a graduate program in public administration at a university in Iceland. The study material in the course included videos where the instructor interviewed administrative officials from the city or state, e.g., on how they based their work on theories studied in the course, recordings of PowerPoint presentations, weekly video recordings answering student questions regarding the course, and a textbook. Personal questions were answered via email. The assessment included three online examinations comprising random questions, six mandatory comments in a discussion thread, and one final essay. Additionally, students had a choice of answering two bonus questions every weekend. The learning management system (LMS) Canvas was used.

Participants and procedure

A survey was sent via Survey Monkey to the 182 students in the 2020 cohort after the course ended and grades were assigned. Following the data analysis, an email was sent to participants asking for volunteers to participate in focus groups. The focus groups were conducted to deepen understanding of some of the results. Participants in the three focus groups (n=10; 60–90 min. long) were all volunteers and signed a form giving consent to anonymous data processing. The focus group discussions were recorded and transcribed verbatim. Subsequently, an interview with the instructor took place. The goal was to compare students' perceptions to those of the instructor. In the fall of 2021, the same survey was sent to the current cohort of 172 students with a few open-ended questions built on the themes from the focus groups. Introductory letters to both cohorts explained the purpose of the study, anonymity, voluntary participation, their right to withdraw from the study at any time, and the handling of data. Completing the survey indicated consent to participate. The authors of this paper did not know the participants. The study was reviewed by the university ethics review board per Icelandic regulations. Of the 354 students registered, 173 participated in the survey (49%), 82 from fall 2020, and 91 from fall 2021, with a response rate of 45% and 53%, respectively.

Demographics

Table 1 shows the demographic characteristics of the participants (n=173). Women comprised most participants in both cohorts, and more than half of the participants were between 30 and 50 years of age. These characteristics were representative of the population. Most lived in the capital area, worked more than 30 hours per week, and selected online studying as their preferred modality. Their ideal choice of working on study projects was either to work individually or partly in a group (see Table 1).

Table 1

Demographics

Demographic	Levels	2020		2021		Total	
		***n*=82**	**%**	***n*=91**	**%**	***n*=173**	**%**
Gender	Men	19	23%	27	30%	46	27%
	Women	63	77%	64	70%	127	73%
Age	20 to 29 years	15	18%	8	9%	23	13%
	30 to 39 years	28	34%	31	34%	59	34%
	40 to 49 years	24	30%	32	35%	56	33%
	50 years and older	15	18%	20	22%	35	20%

Residence	Great capital area	56	68%	58	64%	114	66%
	Countryside	26	32%	33	36%	59	34%
Children	No children	32	39%	29	32%	61	35%
	One child	12	15%	18	20%	30	17%
	Two children	23	28%	31	34%	54	31%
	Three children or more	15	18%	13	14%	28	16%
Prior education	Bachelor's degree	36	44%	39	43%	78	43%
	Diploma at master's level	9	11%	6	7%	15	9%
	Master's degree	37	45%	42	46%	79	46%
	PhD degree	0	0%	4	4%	4	2%
Hours of paid work pr. week	No paid work	15	18%	8	9%	23	13%
	1 to 20 hours	7	8%	8	9%	15	9%
	21 to 30 hours	5	6%	1	1%	6	3%
	31 to 40 hours	30	37%	37	41%	67	39%
	More than 40 hours	25	30%	37	41%	62	36%
Preferred learning modalities	Online	58	71%	83	91%	141	82%
	Blended	19	23%	6	7%	25	14%
	Face-to-face	5	6%	2	2%	7	4%
Ideal project work style*	Individual	45	55%	51	57%	96	56%
	Group	1	1%	0	0%	1	1%
	Mixing individual and group projects	36	44%	39	43%	75	43%

** One answer was missing in 2021 (n=90)*

Measures

Survey

The survey included the shorter version of the MUSIC Inventory (18 items), which has been validated for the Icelandic language (Schram & Jones, 2016). The more extended version has also been validated in Icelandic (Jones et al., 2023). The Cronbach's alpha is good for all five MUSIC scales (see Table 2). Students' perception of instructor caring was measured using the four-item caring scale from the MUSIC Inventory. The caring scale is the same for both versions: 1) The instructor is respectful of me; 2) The instructor is willing to assist me if I need help in the course; 3) The instructor cares about how well I do in this course and; 4) The instructor in this course is friendly (Jones, 2024). A six-point Likert scale was used with ratings from strongly disagree (1) to strongly agree (6) in lieu of directions. In this study, Cronbach's alpha for the caring scale was 0.85, indicating a

good internal consistency, i.e., that the items are closely related (see Table 2). Cronbach's alpha provides a simple way to measure whether or not a score is reliable. Its use assumes that multiple items measure the same underlying construct. Higher values suggest that the items are closely related (a strong correlation) and consistently measure the same construct. Cronbach's alpha for the caring scale in both Icelandic translations was 0.88. The items used to study connectedness and a sense of community were: I felt I had a sufficient connection with the teacher; I felt I had a sufficient connection with the students; In this course, I got the feeling that I was a part of the university's study community; and I felt it was important to connect with the school community and those who are there. The two added open questions for the 2021 cohort were built on the focus group results and were used to get more personal descriptions of what students thought contributed to their feelings of teacher caring: What does the teacher do to give you the feeling that she cares for 1) your success 2) you as a person? These questions were built on Jones et al. (2012). In addition to these items and the traditional demographic information, two questions were used to understand respondents' preferences regarding studying online or face-to-face and working on course projects alone or in groups. The characteristics of the participants were believed to be important for the interpretation of results.

Table 2

Cronbach's alpha for the MUSIC components

MUSIC components - scales	Cronbach's alpha		
	Original version	**Icelandic validation 2016**	**This study**
eMpowerment (4)	0.72	0.68	0.78
Usefulness (3)	0.8	0.87	0.86
Success (4)	0.84	0.83	0.83
Interest (3)	0.77	0.86	0.76
Caring (4)	0.85	0.88	0.85

Number of items in each scale are in parenthesis.

Focus groups/Interview

An interview guide with a few non-leading prompts was employed, asking focus group participants to consider some specific results. An interview guide with open questions was used in the interview with the teacher. The first author conducted both the focus group and the teacher interviews. Both authors had access to the data.

Data analysis

Quantitative analysis

The survey data from both cohorts were analyzed as a whole, as the purpose was to collect general results from the course which was organized the same way for both cohorts and taught by the same instructor. The survey scales and items were the same, except for the two additional open questions for cohort two. Descriptive statistics were recorded, i.e., means and standard deviation for the continuous variables and frequency for the categorical variables. Version 21.0 of SPSS was employed for data analyses.

Qualitative analysis

An inductive approach was used to analyze the data from the focus groups and the interview data, determining meaning and creating themes from the data without preconceptions, based on expert guidelines (Braun & Clarke, 2006; Clarke & Braun, 2013). Analyzing the descriptions of the participants' experiences made it possible to detect patterns that resulted in a better understanding of the survey results. First, the two authors studied the data individually, generating initial codes and creating themes. Subsequently, differences were discussed, and final themes were determined. A deductive approach was used for the responses to open questions because they were already based on established categories from the focus groups.

Mixed methods analysis

Finally, the relevance of the qualitative data to the quantitative data was studied using triangulation, i.e., integrating the results by asking how the themes and patterns relate to students' answers on the survey. This is common in mixed methods analysis (Onwuegbuzie & Leech, 2006; Schram, 2014). The quantitative analysis provides breadth, or a broad, general view of students' perceptions, while the qualitative analysis gives more insight or depth and helps explain the results. As is recommended in mixed methods, the results of the two genres are presented and mixed as much as possible in the results and the discussion sections of this paper (Creswell & Plano-Clark, 2017). The quantitative and qualitative genre results are presented in themes and, where relevant, mixed.

RESULTS

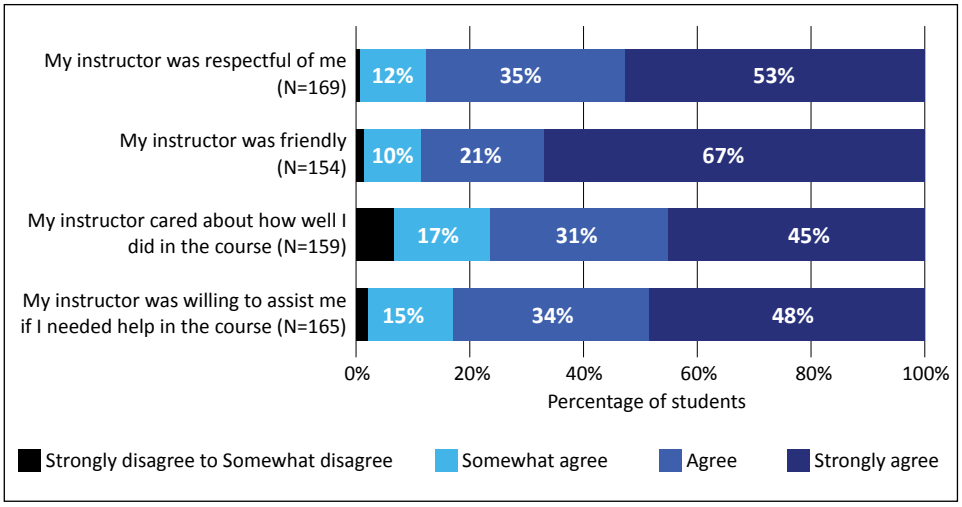
Students' perception of teacher caring and connectedness with the teacher

Students experienced teacher caring to a great degree. The caring scale from the MUSIC Model had a mean of 5.32 (SD=0.73) on a six-point Likert scale with descriptors at each point, where 2.9% chose a negative answer (1 = *strongly disagree*, 2 = *disagree*, 3 = *somewhat disagree*), but 13.4% chose *somewhat agree* (4), 30.3% chose *agree* (5), and 53.4% (6) *strongly agree.* The means were higher than five for each item in the caring factor. 'My instructor was friendly' was the highest (M=5.5, SD=0,78), followed by 'My instructor was respectful of me' (M=5.4, SD=0.72), then 'My instructor cared about how well I did in

the course' (M=5.3, SD=0.84) and last, 'My instructor was willing to assist me if I needed help with the course' (M=5.1, SD=1.1). Results indicated that students perceived that the teacher cared for their success, was friendly and respectful, and was available when they needed assistance (see Figure 1). Excluding the *somewhat agree* responses, positive answers were 76–88%, but including those, positive responses were 93–100% for these individual items (see Figure 1).

Figure 1

Students´ perception of teacher caring for each of the four items in the caring scale



Students responded to the item on the survey, 'I felt I had a sufficient connection with the teacher' (M=4.25, SD=1.26). The majority agreed that it was sufficient. Including the *somewhat agree* group (27.8%), 72% believed they had sufficient connection with the teacher. Of the 27.7% *disagreed*, most answered *somewhat disagree* or 21%, leaving only 7.1% who *disagreed* or *strongly disagreed* with the statement.

In the first cohort focus group, students were asked what made them feel that the teacher cared about their learning. In addition, the second cohort answered the same questions in open boxes on the survey: What does the teacher do to give you the feeling that she cares for your success or you as a person? Of the participants, 58% (n=53) volunteered responses in the open boxes. There was no difference in the responses regarding the questions regarding success and you as a person.

The comparison between the responses from the focus groups and those who answered the open questions revealed very similar responses. The two main themes were instructor behavior and course structure (see Tables 3 and 4). The subthemes for instructor behavior were: informative and encouraging; visible and present; giving timely answers, feedback and support; and arousing interest in the subject. Participants expressed strong satisfaction with teacher behavior and course structure, claiming that

it created connections and a sense of teacher caring. So did the focus groups. They felt connected to the teacher, even to the point that some felt they knew her personally, as expressed by the words "I felt like I knew her" and "She looked into students' eyes." Her character shone through the study material and her effort to support their studies. The subthemes for course structure were good organization and clear direction, a structured timeline, encouraging engagement, professionalism and quality. Students' quotes in Tables 3 and 4 clearly describe their positive experiences. They experienced teacher caring through the teacher's actions or behavior and how she structured and organized the course.

Table 3

Summary of themes and subthemes. The reasons students experienced teacher caring and connection with teacher. Theme 1: Instructor behavior

Theme 1: Instructor behavior	**2020 Focus groups**	**2021 Open answers**	**Teacher's descriptions**
Informative and encouraging	"Sent encouraging emails" "In one of her emails… 'now we are halfway up the mountain, so we do not have far to go."	"Teacher often sent messages about how things were going, what was happening now, and what would happen soon. Very good (smiley face)" "Encourages questions and answers all (course related) questions in weekly videos." "You can always contact her."	"I sent encouraging emails..., pointed out this and that" [connected to news clips or TV programs] "Wrote positive remarks into the discussion thread: 'It was really fun to read this'..."
Visible	"The instructor was visible in all the videos." "She looked into students' eyes." "She speaks directly to us when she answers questions."	"I felt like I knew her." "She was always very friendly in the recordings and visible there."	"I told them: 'You see me'..." "To keep the connection, you need to act alive, not take yourself too seriously, act as you are having a conversation... be present in videos"

Timely answers/ feedback	"Answered (course related) questions in weekly videos". "Prompt, thorough responses to message inquiries; offered Zoom meetings to discuss personal matters"	"Ongoing feedback from teacher was very helpful." "Good access to the teacher and regular emails motivate students." "Great to get Q and A on Mondays. Teacher answers all questions with interest and explains very well." "Does Q and A for everyone, not only those who asked."	"I answered all weekly questions on PPT video, giving everyone equal access." "I quickly answered time-sensitive personal emails."
Support for success	"I felt that the instructor cared about my learning and me finishing the course." "Sent statistics on the results of the weekend questions... progress, positive remarks."	"Provides weekend questions: possibility of raising grades and practicing for the exams." "Respects students and gives good advice in learning." "Tries to reach students by complimenting them and discussing how the group is doing. It works well."	"Told them: Send me some questions." "Sent frequent feedback and advice: Check this out."

Personal presence	"I just feel like I know her... did not feel like I was experiencing an online course" "...pat on the back." "I have tried both...130 students in a lecture hall...I felt like I had her for myself. I could always open the computer and there she was." "I connected with her, you know. I would greet her, see"	"She is extremely encouraging and warm and speaks to students with respect and remarkable closeness considering that she never met us." "She makes an effort to take care of a huge group of students, she has answered my emails, and I sense a warmth from her." "Friendly messages where she tried to encourage people, she seemed to realize that there was much stress in the course, especially because people were doing this in addition to working."	"I emphasize connection, encouragement." "The discussion thread gave me great connection with students... did not happen in the face-to-face course where I had them do group work."
Aroused interest in the subject	"Fun to listen to." "Suddenly I was interested in things that I had no idea I was interested in." "The way she approaches the subject, it gets you more interested, and to listen to the interviews."	"Discussions and video interviews connect learning and practice." "...[her] passion for the subject." "She is so knowledgeable about the material; it makes uninteresting stuff really interesting." "A warm attitude and interest in the subject shines through during teaching, and it is engrossing and increases one's interest in the course content."	"Important to keep their connection to the course material alive... related the course material to real-life, e.g., news and other TV programs."

Table 4

Summary of themes and subthemes. The reasons students experienced teacher caring and relatedness with teacher. Theme 2: Course structure

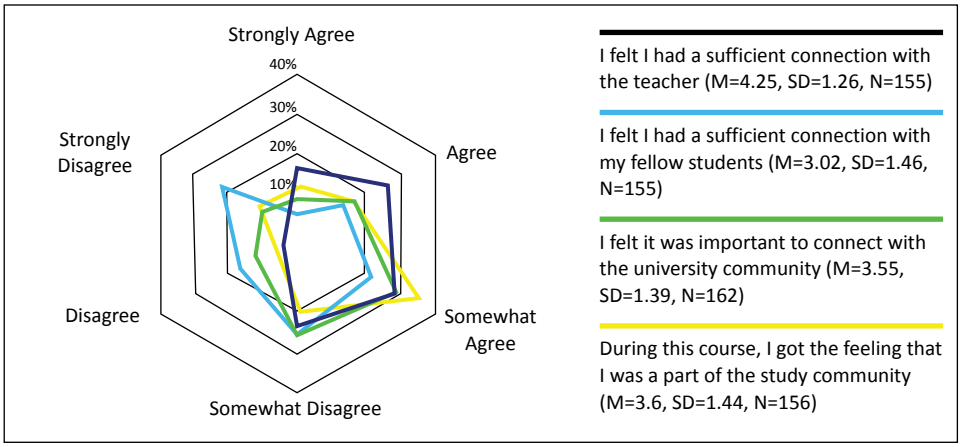
Theme 2: Course structure	**2020 Focus groups**	**2021 Open answers**	**Teacher's belief**
Good organization and clear directions	"Clear curriculum that was easy to follow" "Gave many instructions throughout the course." "Best instructions ever" (essay rubric). "Everything was so clear from the beginning."	"Clear goals, detailed information within Canvas, good organization, consistency in study materials and assessment." "Frequent feedback." "I thought the course was very well organized, the recordings clear and feedback to students to be applauded."	„I gave them clear directions for the essay..." "I had completed all the lecture- and interview videos before the course started."
Structured timeline encouraging student engagement	"Pushed students, kept them on track." "You needed to stay on track." "It kept you working, you know, the chapter quizzes and the weekend questions."	"The weekend questions…that's why I gradually learned the material over the semester." "She had clear and rather challenging expectations, but fair, and because they are clear, it is easier to fulfill them."	"I organized it into three modules." "I had an introductory lecture on the organization." "Offered weekend questions [bonus] and emailed them a report of how it went. They found it motivating"
Professionalism and quality	"Making quality videos. Instructor cared enough to spend all this time on making them" "Such ambition in this course"	"Slides professional." "Got ambition for students' success."	"Had a professional do the interview recordings [...] I learned how to cut and produce recordings." "It makes a big difference what the recordings look like."

Students' perceptions of connectedness with their fellow students and the university community

Responding to the survey statements exploring whether respondents felt they had a sufficient connection with their fellow students and the study or university community, the majority disagreed that they had had sufficient connection with other students (see Figure 2).

Figure 2

Radar chart showing responses regarding *connections with the teacher, fellow students, study community and the importance of being part of the university community.*



The focus group explained, however, that even though they would have liked more connection with other students, they also appreciated the practicality of independent, online studies. Most preferred online learning modalities (82%) or blended learning (14%) to face-to-face studies (Table 1). Many had work (87%) and family responsibilities (65%), and it fit them better to work on individual assignments (56%) because working with others often required more time. Others thought there could be some variety. Like many others, the participants studied online because of their preference or demographic context and did not expect to establish connections with fellow students. Some of the open-box comments described their position:

> It is challenging to be in contact with so many students, and I did not feel personally connected, but I did not think it was necessary.

> Because this is a vast course, it is expected that the instructor and the students will not have frequent personal contact.

Responding to the statement in the survey regarding the importance of connecting with the university community, most seemed ambivalent, choosing the *somewhat disagree/somewhat agree* options. However, some felt rather connected to the study community and considered this important (see Figure 2). Many focus group participants indicated that it was enough for them to connect to their work community.

The instructors' view of which factors influenced students' belief that she cared for them and their success

The results from the instructor interview lined up closely with the themes generated from the focus groups and the open-box questions (see Tables 3 and 4). She had not seen the student results prior to the interview. Her answers revealed how she organized the course and connected with students. She indicated that she made a real effort to connect by being personal, e.g., sharing experiences and stories and speaking informally in her recordings. She was able to send encouraging emails, participate actively in the discussion thread, answer their questions in the weekly videos, and thus support their learning. Having made all the organizational preparations for the course before it started, she had more time to connect with students. The instructor's responses confirmed students' answers of how she successfully planned the course and the activities to influence students' perceptions of her presence and support. Finally, she praised the University Center for Teaching and Learning for excellent assistance in developing the online version of the course.

DISCUSSION AND CONCLUSION

Moore (1989) emphasized three student interactions that must be considered in designing a distance education course: student-peer, student-instructor, and student-content. When these factors are integrated into the course design, motivation and student satisfaction are positively influenced (Bernard et al., 2009). Even though the instructor and the students only made direct contact through an online discussion thread, the students in this large asynchronous course environment perceived a strong sense of teacher caring which is an important motivational factor (Jones et al., 2018). The qualitative results indicated that instructors' behavior and course organization strongly influenced students' perception of teacher caring. The instructor's caring behavior was characterized by personal presence through frequent, encouraging, and informative emails, participation in discussion threads, and visibility in study material and recordings. In recorded interviews, she spoke lively, often using humor to create a pleasant atmosphere. Additionally, students perceived that she made a real effort to support their studies with a well-organized course structure, giving them the feeling that she cared about their success. Jones et al. (2012) similarly found that the instructor's actions, especially prompt, personal emails and thorough responses gave students the impression that the teacher cared about them. Accessibility, encouragement, and flexibility also added to their perception of academic caring. However, unlike the respondents in this study, participants did not specifically mention characteristics regarding course design as contributing to their sense of being cared for. As mentioned in the literature review, studies on social presence, a related concept, indicate that it can develop online but often depends on course design and teacher behavior (Richardson et al., 2017). Tu and McIsaac (2002) similarly linked this development to course design. The key subthemes regarding course design in this study were good organization, a structured timeline, and professionalism and quality. In their study on MOOC courses, Gregori et al. (2018) found that quality

videos significantly predicted course completion and teacher presence, the latter increasing students' perception of teacher caring. In their meta-analysis, Richardson et al. (2017) shared results from seven studies that reported similar subthemes belonging to the two themes: course design and instructor behavior.

In this study, students did not feel connected to their fellow students and did not expect that connection to develop. Most students preferred asynchronous online modalities and individual assignments. They felt it fit their situation better. Even though some would have liked more connection, e.g., through group projects, most explained that their purpose was to finish their degree while working and caring for their family, and group work would be challenging to organize. This may be a typical attitude for older graduate students. Most participants in this course were between 30-50 years of age and probably better able to self-regulate than young students who often need more peer support. In addition, the course was often related to their current employment, so they may have been self-motivated to a degree. Some would have liked a stronger connection to the university community, but their situation did not allow for the time required. Swan and Shih (2005) suggest that teacher presence may be more important to student satisfaction than peer social presence or connection.

It could be a challenge to establish connections in large online courses and students might not even expect that to happen, as these results indicate, also mentioned in Jones et al. (2012). Some studies have suggested that larger online courses negatively affect success and learning (Arbaugh & Duray, 2002; Hiltz & Wellman, 1997). This could be attributed to the time it takes to manage large courses. The overall course design is generally in place when courses start, but preparing teaching material, connecting with students, and assessing learning takes time. Faculty development initiatives and centers for teaching and learning should be geared to assist teachers with designing and organizing their online courses. The course instructor in this study received professional assistance developing the course from the Center for Teaching and Learning before it started. She was able to spend more time connecting with students because she had finished designing the course and recording videos before the course started. Her modules were well-organized and easy to follow, as were her messages. Studies have shown that a large volume of unorganized messages can cause information overflow, influencing the learning experience (Ellram & Easton, 1999). By using quality recordings of interviews with experts, short lectures on material from the book and research papers, and their questions and conversation on the discussion thread, she felt she could "keep them realizing the vitality with the study material". This helped them engage with the content of the course. Student-to-content is one of the three types of student interactions important for successful distance studies (Moore, 1989). Students interact with the course content by studying, relating the content to prior knowledge, creating meaning, and developing understanding and perspectives. The organization of the course can affect the success of this interaction. In this study, the teacher's course design and behavior influenced students' abilities to connect with the course content. Her visibility in the course content made students connect with the study material, they sensed the usefulness of studying theories due to practical video interviews and their interest was increased through lively and inspiring PowerPoint presentations.

Our results support prior studies reporting on the importance of teacher caring and connectedness in the learning context. The caring factor is important in motivating students and is strongly related to many other motivation factors, such as those in the MUSIC Model, eMpowerment, Usefulness, Success, and Interest (Schram & Jones, 2016). The teacher empowered students by giving them flexibility within her course design. They could study the material and watch videos within a specific timeframe, answer optional bonus questions, and send questions or comments on topics of interest (M). The teacher continually reminded them of the usefulness of the theories and related research with the interview videos and comments (U). She supported their success in several ways (S). She triggered interest by sharing her passion for the topic and using diverse methods (I). Finally, she portrayed her desire to connect in a way that made students perceive her caring for them and their success (C). All these factors worked to engage students and motivate them to learn.

Since teacher presence or caring is an established motivational factor, it is important to understand how and why students perceive a caring presence. This study has added some insight by sharing the experiences of two cohorts of graduate students. As Richardson et al. (2017) recommend in their meta-analysis, more research is needed in this area.

LIMITATIONS AND FUTURE RESEARCH

This study was performed at the department of public administration in one university. Consequently, it is impossible to generalize the results to all university students. Participants were graduate students, primarily working full-time in their fields. It would be helpful to extend the study to the undergraduate level and diverse fields to investigate which factors influence younger students' perception of teacher caring and connectedness to fellow students

REFERENCES

Allen, I. E., & Seaman, J. (2014). *Grade change: Tracking online education in the United States.* Babson Survey Research Group. https://www.bayviewanalytics.com/reports/gradechange.pdf

Allen, I. E., & Seaman, J. (2016). *Online report card: Tracking online education in the United States*. Babson Survey Research Group. https://files.eric.ed.gov/fulltext/ED572777.pdf

Allen, I. E., & Seaman, J. (2017). *Digital learning compass: Distance education enrollment Report 2017*. Babson Survey Research Group. https://www.bayviewanalytics.com/reports/digtiallearningcompassenrollment2017.pdf

Arbaugh, J. B., & Duray, R. (2002). Technological and structural characteristics, student learning and satisfaction with web-based courses: An exploratory study of two on-line MBA programs. *Management Learning, 33*(3), 331–347. https://doi.org/10.1177/1350507602333003

Aristovnik, A., Karampelas, K., Umek, L., & Ravšelj, D. (2023). Impact of the COVID-19

pandemic on online learning in higher education: A bibliometric analysis. *Frontiers in Education, 8*, 1225834. https://doi.org/10.3389/feduc.2023.1225834

Artino, A. R. (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

Baumeister, R., & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Bergin, C., & Bergin, D. (2009). Attachment in the classroom. *Educational Psychology Review*, *21*, 141–170. https://doi.org/10.1007/s10648-009-9104-0

Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M., Surkes, M. A., & Bethel, E. C. (2009). A meta-analysis of three types of interaction treatment in distance education. *Review of Educational Research, 79*(3), 1243–1289. https://doi.org/10.3102/0034654309333844

Braun, V., & Clarke, C. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, *26*(2), 120–123. https://www.researchgate.net/publication/269928387

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Ellram, L. M., & Easton, L. (1999). Purchasing education on the internet. *Journal of Supply Chain Management, 35*(4), 11–19. https://doi.org/10.1111/j.1745-493X.1999.tb00051.x

Ericson Nolasco, C. (2022, February 1). *Online distance learning: The new normal in education*. eLearning Industry. https://elearningindustry.com/online-distance-learning-the-new-normal-in-education

Garrison, D. R. (2011). *E-learning in the 21st century: A framework for research and practice*. Taylor & Francis.

Goodenow, C. (1992). Strengthening the links between educational psychology and the study of social contexts. *Educational Psychologist, 27*(2), 177–196. https://doi.org/10.1207/s15326985ep2702_4

Goodenow, C. (1993). Classroom belonging among early adolescent students. *The Journal of Early Adolescence, 13*(1), 21–43. https://doi.org/10.1177/0272431693013001002

Gregori, E. B., Zhang, J., Galván-Fernández, C., & Fernández-Navarro, F. A. (2018). Learner support in MOOCs: Identifying variables linked to completion. *Computers & Education, 122*, 153–168. https://doi.org/10.1016/j.compedu.2018.03.014

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, *41*(2), 111–127. https://doi.org/10.1207/s15326985ep4102_4

Hiltz, S. R., & Wellman, B. (1997). Asynchronous learning networks as a virtual classroom.

Communications of the ACM, 40(9), 44–49. https://doi.org/10.1145/260750.260764

Jones, B. D. (2009). Motivating students to engage in learning: The MUSIC model of academic motivation. *International Journal of Teaching and Learning in Higher Education, 21*(2), 272–285. https://www.isetl.org/ijtlhe/pdf/IJTLHE774.pdf

Jones, B. D. (2024). *User guide for assessing the components of the MUSIC® model of motivation.* https://www.themusicmodel.com/wp-content/uploads/2024/10/User-Guide-Oct-2024.pdf

Jones, B. D. (2018). *Motivating students by design: Practical strategies for professors* (2nd ed.). CreateSpace. http://hdl.handle.net/10919/102728

Jones, B. D., Fenerci-Soysal, H., & Wilkins, J. L. M. (2022). Measuring the motivational climate in an online course: A case study using an online survey tool to promote data-driven decisions. *Project Leadership and Society, 3*, 100046. https://doi.org/10.1016/j.plas.2022.100046

Jones, B. D., Krost, K., & Jones, M. W. (2021). Relationships between students' course perceptions, effort, and achievement in an online course. *Computers and Education Open, 2*, 100051. https://doi.org/10.1016/j.caeo.2021.100051

Jones, B. D., Watson, J. M., Rakes, L., & Akalin, S. (2012). Factors that impact students' motivation in an online course: Using the MUSIC model of academic motivation. *Journal of Teaching and Learning with Technology, 1*(1), 42–58. https://scholarworks.iu.edu/journals/index.php/jotlt/article/view/2040

Jones, B. D., & Wilkins, J. L. M. (2013). Testing the MUSIC model of academic motivation through confirmatory factor analysis. *Educational Psychology, 33*(4), 482–503. https://doi.org/10.1080/01443410.2013.785044

Jones, B. D., Wilkins, J. L. M., Schram, A. B., Gladman, T., Kenwright, D., & Ramírez, C. A. L. (2023). Validating a measure of motivational climate in health science courses. *BMC Medical Education, 23*, 548. https://doi.org/10.1186/s12909-023-04311-3

Keller, J. M. (2008). First principles of motivation to learn and e^3-learning. *Distance Education, 29*(2), 175–185. https://doi.org/10.1080/01587910802154970

Kentnor, H. E. (2015). Distance education and the evolution of online learning in the United States. *Curriculum and Teaching Dialogue, 17*(1-2), 21–34. https://ssrn.com/abstract=2643748

Lassoued, Z., Alhendawi, M., & Bashitialshaaer, R. (2020). An exploratory study of the obstacles for achieving quality in distance learning during the COVID-19 pandemic. *Education Sciences, 10*(9), 232. https://doi.org/10.3390/educsci10090232

Martin, F., Sun, T., & Westine, C. D. (2020). A systematic review of research on online teaching and learning from 2009 to 2018. *Computers & Education, 159*, 104009. https://doi.org/10.1016/j.compedu.2020.104009

Mazzolini, M., & Maddison, S. (2007). When to jump in: The role of the instructor in online discussion forums. *Computers & Education, 49*(2), 193–213. https://doi.org/10.1016/j.compedu.2005.06.011

Moore, M. G. (1989). Editorial: Three types of interaction. *American Journal of Distance Education*, *3*(2), 1–7. https://doi.org/10.1080/08923648909526659

Noddings, N. (1992). *The challenge to care in schools: An alternative approach to education*. Teachers College Press.

Onwuegbuzie, A. J., & Leech, N. L. (2006). Linking research questions to mixed methods data analysis procedures 1. *The Qualitative Report, 11*(3), 474–498. https://doi.org/10.46743/2160-3715/2006.1663

Owens, J., Hardcastle, L. A., & Richardson, B. (2009). Learning from a distance: The experience of remote students. *International Journal of E-Learning & Distance Education, 23*(3), 53–74. https://www.ijede.ca/index.php/jde/article/view/596

Paas, F., Tuovinen, J. E., van Merriënboer, J. J. G., & Darabi, A. A. (2005). A motivational perspective on the relation between mental effort and performance: Optimizing learner involvement in instruction. *Educational Technology Research & Development, 53*(3), 25–34. https://doi.org/10.1007/BF02504795

Parkes, K. A., Jones, B. D., & Wilkins, J. L. M. (2015). Assessing music students' motivation using the MUSIC model of academic motivation inventory. *Applications in Research in Music Education, 35*(3), 16–22. https://doi.org/10.1177/8755123315620835

Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Networks, 6*(1), 21–40. https://doi.org/10.24059/olj.v6i1.1870

Pineau, H. J. (2007). *A study of motivating factors leading to student retention in web-based learning for higher education* doctoral dissertation]. Wayne State University ProQuest Dissertations & Theses, 2007. 3279743

Pintrich, P. R., Conley, A. M., & Kempler, T. M. (2003). Current issues in achievement goal theory and research. *International Journal of Educational Research, 39*(4-5), 319–337. https://doi.org/10.1016/j.ijer.2004.06.002

Popovich, C. J., & Neel, R. E. (2005). Characteristics of distance education programs at accredited business schools. *American Journal of Distance Education, 19*(4), 229–240. https://doi.org/10.1207/s15389286ajde1904_4

Richardson, J. C., Maeda, Y., Lv, J., & Caskurlu, S. (2017). Social presence in relation to students' satisfaction and learning in the online environment: A meta-analysis. *Computers in Human Behavior, 71,* 402–417. https://doi.org/10.1016/j.chb.2017.02.001

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and 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

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.* The Guilford Press. https://doi.org/10.1521/978.14625/28806

Schram, A. B. (2014). A mixed methods content analysis in the research literature in science education. *International Journal of Science Education, 36*(15), 2619–2638. https://doi.org/10.1080/09500693.2014.908328

Schram, A. B., & Jones, B. D. (2016). A cross-cultural adaptation and validation of the Icelandic version of the MUSIC model of academic motivation inventory. *Icelandic Journal of Education / Tímarit um menntarannsóknir, 25*(2), 159–181. https://ojs.hi.is/index.php/tuuom/article/view/2433

Schunk, D. H., Meece, J. L., & Pintrich, P. R. (2014). *Motivation in education: Theory, research, and applications* (4th ed.). Pearson.

Seaman, J. E., Allen, I. E., & Seaman, J. (2018). *Grade increase: Tracking distance education in the United States.* The Babson Survey Research Group. https://www.bayviewanalytics.com/reports/gradeincrease.pdf

Seifert, T., & Bar-Tal, S. (2023). Student-teachers' sense of belonging in collaborative online learning. *Education and Information Technologies, 28*, 7797–7826. https://doi.org/10.1007/s10639-022-11498-3

Selvaraj, A., Radhin, V., Ka, N., Benson, N., & Mathew, A. J. (2021). Effect of pandemic based online education on teaching and learning system. *International Journal of Educational Development, 85*, 102444. https://doi.org/10.1016/j.ijedudev.2021.102444

Sergiovanni, T. J. (1994). Organizations or communities? Changing the metaphor changes the theory. *Educational Administration Quarterly, 30*(2), 214–226. https://doi.org/10.1177/0013161X94030002007

Simpson, O. (2013). Student retention in distance education: Are we failing our students? *Open Learning: The Journal of Open, Distance and e-Learning, 28*(2), 105–119. https://doi.org/10.1080/02680513.2013.847363

Steinert, Y., Mann, K., Anderson, B., Barnett, B. M., Centeno, A., Naismith, L., Prideaux, D., Spencer, J., Tullo, E., Viggiano, T., Ward, H., & Dolmans, D. (2016). A systematic review of faculty development initiatives designed to enhance teaching effectiveness: A 10-year update: BEME Guide No. 40. *Medical Teacher, 38*(8), 769-786. https://doi.org/10.1080/0142159x.2016.1181851

Stevens, T., & Switzer, C. (2006). Differences between online and traditional students: A study of motivational orientation, self-efficacy, and attitudes. *Turkish Online Journal of Distance Education, 7*(2), 90–100. https://files.eric.ed.gov/fulltext/ED494394.pdf

Swan, K., & Shih, L. F. (2005). On the nature and development of social presence in online course discussions. *Journal of Asynchronous Learning Networks, 9*(3), 115–136. https://doi.org/10.24059/olj.v9i3.1788

Tao, Y. (2009). *The relationship between motivation and online social presence in an online class* (Publication no. 3871) [Doctoral dissertation, University of Central Florida]. Electronic Theses and Dissertations. https://stars.library.ucf.edu/etd/3871

Tu, C. H., & McIsaac, M. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education, 16*(3), 131–150. https://doi.org/10.1207/S15389286AJDE1603_2

URMC Center for Community Health & Prevention. (n.d.). *Our approach.* https://www.urmc.rochester.edu/community-health/patient-care/self-determination-theory.aspx

Valantinaité, I., & Sedereviciuté-Paciauskiené, Z. (2021). The pros and cons of online learning environment from the students' perspective. In *International Scientific Conference "Rural Environment. Education. Personality" (REEP)* (pp. 240–248). Latvia University of Life Sciences and Technologies. https://doi.org/10.22616/REEP.2021.14.026

Weaver, C. M., & Albion, P. (2005). Momentum in online discussions: The effect of social presence on motivation for participation. In *ASCILITE 2005: 22nd annual conference of the Australasian society for computers in learning in tertiary education: Balance, fidelity, mobility: Maintaining the momentum?* (pp. 703–706). Australasian Society for Computers in Learning in Tertiary Education. https://www.ascilite.org/conferences/brisbane05/blogs/proceedings/81_Weaver.pdf

Wentzel, K. R. (1997). Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology, 89*(3), 411–419. https://doi.org/10.1037/0022-0663.89.3.411

Wentzel, K. R. (2022). Does anybody care? Conceptualization and measurement within the contexts of teacher-student and peer relationships. *Educational Psychology Review, 34*, 1919–1954. https://doi.org/10.1007/s10648-022-09702-4

Whipp, J. L., & Chiarelli, S. (2004). Self-regulation in a web-based course: A case study. *Educational Technology Research and Development, 52*(4), 5–21. https://doi.org/10.1007/BF02504714

Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology, 25*(1), 68–81. https://doi.org/10.1006/ceps.1999.1015

Willging, P. A., & Johnson, S. D. (2004). Factors that influence students' decision to dropout of online courses. *Journal of Asynchronous Learning Networks, 8*(4), 105–118. https://doi.org/10.24059/olj.v8i4.1814

Zamora, A. N., August, E., Fossee, E., & Anderson, O. S. (2023). Impact of transitioning to remote learning on student learning interactions and sense of belonging among public health graduate students. *Pedagogy in Health Promotion*, *9*(3), 203–213. https://doi.org/10.1177/23733799221101539

The article was received 5th of October 2023 and was accepted 1st of May 2025.

ABOUT THE AUTHORS

Ásta B. Schram (astabryndis@hi.is), PhD, is an associate professor and director for educational development at the School of Health Sciences, University of Iceland. Her research focus is on student and teacher motivation, teaching methods, identity, and self-regulation. Ásta conducts and organizes pedagogical workshops, discussion hours (teach talks), courses and conferences for teachers. In addition, she serves on organizational committees. Ásta graduated with her PhD in educational psychology from Virginia Tech, USA. https://orcid.org/0000-0003-2980-1605

Sigurbjörg Jóhannesdóttir (sigurbjorg@hi.is), is a project manager and an adjunct lecturer at the University of Iceland. Her research focus is on open science, open educational resources, online teaching, digital learning, social media and teaching methods. One of Sigurbjörg's roles at the university is to support teachers by organizing technical and pedagogical workshops and courses. Sigurbjörg graduated with her MEd from the University of Iceland. https://orcid.org/0000-0001-8102-4677