

# When Engagement in Course-Related Social Media Leads to Better Course Self-Efficacy

Jean-Éric Pelet  
ESCE International Business  
School  
INSEEC U Research Center  
[je.pelet@gmail.com](mailto:je.pelet@gmail.com)

Somayeh Zamani  
University of Isfahan, Iran  
[parstuka@gmail.com](mailto:parstuka@gmail.com)

## Abstract

*Learners nowadays bring social media (SM) user's knowledge to the classrooms with them. Many teachers (researchers, professors, instructors, and people in charge of the learning organizations in general) have to deal with the fact that individuals 1) sometimes adopt a mute behavior in classroom and 2) duplicate their offline social networks in SM spaces. Engagement in course-related SM groups leads to engagement into the course subject, that improves self-efficacy of the learners. This paper seeks to find out why individuals engage in course-related SM groups and how the SM engagement of silent students can mediate their self-efficacy. Results show that experiencing eudaimonism as an emotion and state of flow, positively affects the engagement in course-related SM groups. SM engagement positively affects students' self-efficacy and mediates the negative effect of selective mutism. This research has implications for educational institutions as well as researchers in the e-learning fields.*

## 1. Introduction

A variety of factors may affect learning and educational achievements. These factors include learners' motivations, the online or face-to-face interactions of learners with each other, opportunities for social learning [55], learners' behavior and mood, their psychological states [36], or competencies of the lecturer, [38]. Online technologies are changing the way people communicate, learn, produce, and share knowledge [41]. Thus, the relevance of factors affecting learning achievement is also subject to change. As social media (SM) is all about creating and sharing information since it connects people at various levels [30], it also plays in favor of increasing and decreasing factors that affect learning. Thus,

professors, instructors, and people in charge of the learning organizations in general, referred to as teachers in this paper hereinafter, need to take into account the way SM affect their learners. Fleaca and Stanciu [18] contend that educational organizations have to include digital and online technologies into course designs. However, SM platforms have been developing at such a speed that educational organizations are lagging behind on adapting to changes [41].

For teachers, to improve the efficacy of their courses in the SM era, it is imperative to assimilate SM into their education and harness the opportunities SM can provide to enhance the learning success of their students [47]. Studies have emphasized the positive effects of self-efficacy on students' achievement [48], [43]. Course self-efficacy refers to the perception of students regarding their capabilities to perform course-related activities and to achieve required outcomes [50], [20]. Hence, teachers should choose strategies to improve self-efficacy revolving around helping students discover their capabilities [48]. SM can provide learners with opportunities for collaborative learning spaces and reflecting on learned subjects and testing their abilities [12] that enhance course self-efficacy.

Scholars emphasize learner characteristics among determinants of efficiency of the courses [51], [40]. For example, learner's anxiety is one of the major causes of low learning achievement; to the extent that it even neutralizes the higher amount of efforts that anxious learners undertake [46]. Students with social anxiety may inhibit themselves from talking in front of their teacher and classmates [4]. Thus, high social anxiety turns some students into silent learners who feel uncomfortable asking questions or participating in face-to-face discussions in classroom settings [3]. Since active learning, requires students to actively participate in the subjects rather than being the mere receiver of information [12], silent learners who inhibit themselves from asking questions and expressing their

ideas, may suffer from lower course self-efficacy [31]. Online environments in comparison to face-to-face settings, reduce social presence, defined as “*the acoustic, visual, and physical contact*” between communication partners [30]. Since such environments can decrease the psychological perception of others’ presence, shy or silent individuals may experience less speech inhibition in online communications [21]. Although engagement in online learning environments can occur in an active or passive manner [45], silent learners who engage passively can follow and read the contents created by their classmates. They can read the course-related discussions in course-related SM groups and learn from their classmates by reading their contents [55]. Thus, the online groups of classmates created in SM that allow learners to generate and read online content [11], can provide more silent students with opportunities to fill the self-efficacy gap caused by their social anxiety.

Learners who engage in challenging activities on SM that require concentration and arouse their curiosity and excitement, may experience an enjoyable mental state called “flow” mainly studied and observed in psychology; that can distort their sense of time and encourage them to continue their usage [44]. Scholars have previously studied the effects of SM usage on the effectiveness of online [49], and offline courses [12], and motivations to engage in learning systems [36], [27]. However, the impact of course-related SM groups on course self-efficacy and its role in easing the adverse effects of anxiety is under-investigated. The present study aims to address this gap. In the remainder of this paper, the literature on SM engagement and students’ silence and flow experience is reviewed before defining the hypotheses. The paper then presents a conceptual model that leads to the methodology section, followed by data collection and research findings, before discussion and conclusion.

## 2. Literature review and hypotheses development

### 2.1. Course efficacy and course-related SM engagement

The concept of engagement has been studied and defined by various marketing scholars, for a review see [9], [7]. Different concepts related to engagement like media engagement, brand engagement, and consumer engagement behavior have also been suggested and studied [26]. The least common denominator of all the engagement-related definitions refers to the “*individual’s inclination to spend time and energy on undertaking focal interaction with specific objects of*

*engagement*” [9], [26]. Engagement in learning literature addresses the problem of unmotivated, disengaged learners and mainly focus on behavioral, cognitive and affective dimensions of engagement [1]. With the advent and popularity of SM, scholars have considered SM engagement as a potential way to improve the learning effectiveness, e.g. [47], [12], [37]. SM engagement behaviors include co-creating content and interacting around the subject of interest in the context of SM [11]. Online behaviors associated with engagement with a focal object through SM include engaging in SM dialogues, SM posting, following and sharing the content created by other members, reading comments about the subject of interest, engaging in the conversations around the subject, commenting on blogs about the subject of interest, and circulating subject-related content [15].

SM presents a promising sphere for engaging learners in course subjects and building social networks of learners [13]. Knowledge acquisition, sharing as well as promoting information and opinions of others, and also exchanging ideas about a focal subject are among SM engagement practices recognized by scholars [15]. With the advent and popularity of SM, the way students interact and learn has changed because the interacting and collaborating nature of SM has changed the way students acquire knowledge and interact with society [13]. Students nowadays come to courses with prior knowledge and an established network on SM [13], [12]. Thus, by integrating SM into course design, the engagement of the learners with the subject of the course, collaboration and knowledge sharing among learners, increases [13]. The increased collaboration and knowledge exchange, therefore, leads to active learning, that means learners reflect on what they have learned during the course, and engage in deeper learning [12] that can increase their course self-efficacy.

Embedding SM into course design has the potential to make students more enthusiastic about course contents, and this leads to more participative and engaging classrooms [13]. The posts and content created by students on the SM can reinforce their self-confidence in their mastery of the course materials, and foster the belief that they can perform well in the course. They can thus increase their course efficacy [13]. Thus, this research hypothesizes that:

***H1. SM engagement with course subjects, increases course self-efficacy***

Though engagement in SM groups can increase learners’ self-efficacy, other factors might play a role in increasing or decreasing the self-efficacy of the learners. Some scholars (e.g. [21], [40]) contend that the learner’s characteristics impact their self-efficacy.

One learner characteristics that scholars (e.g., [33], [17]) have taken into account is selective mutism.

## 2.2. Selective mutism

Scholars call the persistent avoidance to speak in certain social situations like in school in front of the teacher and classmates “selective mutism” [17], [33]. The term “selective” refers to the fact that the individual refuses to speak in “selected” situations that arouse anxiety [33]. Although the failure to speak in its clinical severity starts in childhood, it can last for several years to adulthood [29]. Since learners need to communicate with classmate and teachers to learn effectively [17], the failure to speak interferes with educational achievements [33]. Scholars believe that active learning that is necessary for effective learning needs communication and collaboration [12]. The failure to speak does not relate to speech problems or lack of language knowledge [31], [29]. An anxious condition causes selective mutism [33]. Being able to dodge situations that require speaking in public, adults are less frequently in positions to reveal their speech reluctance [33]. Selective mutism in its clinical severity represents the end of the spectrum of social anxiety and speech self-inhibition [29]. Individuals with less social anxiety still inhibit themselves from speaking in anxiety-provoking social situations like in classrooms when they are required to speak proactively or on demand [33]. The anxiety of exposure to situations wherein others may negatively evaluate the individual while speaking, causes reluctance to speak [17]. Accordingly, this research hypothesizes that:

***H2: Selective mutism negatively affects course self-efficacy.***

Whereas more socially skilled users enjoy opportunities offered by SM to expand their communications with their peers [10], socially anxious individuals use SM to compensate for their discomfort in face-to-face relationships [16]. Students with social anxiety can still participate in course-related SM groups by reading and following the content of other classmates. Leclercq, Poncin, and Hammadi [35] suggested a typology of online community members concerning content co-creation. Accordingly, they identified invisible users who follow the content of the community without leaving a trace. Invisible users seek to fulfill their curiosity and explore the ideas shared by other members.

To investigate the effects of individual traits on users’ communication experiences, Hammick and Lee [21] have investigated shy vs. non-shy individuals in face-to-face vs. online social settings. Their study shows that socially anxious people experience less communication apprehension in computer-mediated

settings compared to face to face social situations. They argue that since online environments reduce non-verbal and demographic social cues such as gender, body gesture and social class, it can decrease social anxiety, allowing more socially anxious people to communicate with others. Online communications allow individuals to exert control on their non-verbal signals and manage their self-presentation more selectively. Findings of their empirical research on the usage of instant messaging (IM) applications, [2] reveal that socially anxious individuals who are concerned about the evaluation of others, prefer technology-mediated communication such as messaging applications rather than face to face interactions. Bardi and Brady’s research did not prove any relationship between social anxiety and the amount of IM usage [2]. However, they concluded that socially anxious people use instant messaging applications to supplement their social life and decrease their loneliness. They define messaging as any text-based communication that allows two or more people to exchange text messages through the Internet [2]. Examples of such environments are WhatsApp, Telegram, Slack, Franz, Trello or Facebook messenger. Socially anxious people use online communications to make less socially present friends and mend the deficiency in the social network of their physical life [14].

Thus, engagement in the course subjects through course-related SM allows silent learners to follow the course related contents, express their ideas in a less anxiety-provoking environment, and enjoy more active learning that leads to higher self-efficacy. This research hypothesizes that:

***H3: Selective mutism negatively affects engagement in course-related SM groups.***

***H4: SM course engagement mediates the relationship between silent mutism and course self-efficacy.***

In addition to confidence, other factors such as prior experience and motivation affect engagement in online learning environments [45]. Scholars have examined the user’s motivations to engage with SM, e.g. [9], [44]. The experience of flow state counts among these motivations.

## 2.3. Flow and SM engagement

Some institutions initiate to create and administer course-related SM groups [23], [12], [49]. Teachers in such institutions create content for students to read on SM groups [12] and or force students to engage in compulsory online discussions [23]. SM is a space based on web 2.0 technologies that enable users to collaborate, communicate, create, and share information [13]. Thus, learners can be motivated to

engage in course-related SM groups and proactively co-create content and co-administer it. Intrinsic motivations and enjoyment, increase learners' activities in such SM groups [55]. To encourage participants to engage in online communities with intrinsic motivation, practitioners apply lessons learned from gaming spheres in online non-gaming spaces. The presumption is that the enjoyment and challenge of gaming features provide members with intrinsic motivation to involve in content creation and following the contents [34].

Looking for an understanding of the inherent rewards individuals receive from engaging in diverse activities, Csikszentmihalyi [5] conducted a study that led him to the discovery of the "flow state." Csikszentmihalyi's research participants explain this state of being as an experience wherein *"they devoted time and effort to their activity because they gained a peculiar state of experience from it. An experience that is not accessible in 'everyday life'"* [5]. Unlike everyday life activities, the state of flow is not boring and does not make the individuals anxious. It is somewhere between boredom and anxiety, where the individual is immersed in the autotelic experience (*i.e.*, engaging in an activity that has a purpose in itself). The state of flow is a "holistic sensation" that only arises when the individual acts with total involvement. Flow is experienced *"as a unified flowing from one moment to the next, in which s/he is in control of her/his actions and in which there is little distinction between self and environment, between stimulus and response and between past, present and future"* [5] (p.36).

Effortless attention, attained in the state of flow, improves the quality of experience [6]. When in the flow, the individual pays a high amount of attention to a task, but at this state, investing more attention requires less effort. Such a state happens when a person has a sense of control, receives immediate feedback and enjoys performing a challenging activity, while skills of the person match the level of the task's challenge [5], [6]. Neuroscientific experiments have revealed that the state of flow relates to brain activity in the prefrontal cortex that is responsible for cognition and emotion, and also maintaining internal goals and processing internal rewards [54]. However, the proneness of people to experience the state of flow differs from individual to individual. A higher predisposition of individuals to flow is subject of the high availability of dopamine D2R (*i.e.*, one of the five types of dopamine receptors that allow dopamine neurotransmitters to connect the brain neurons) in their brains which is an indication of emotional stability, positive affect and lower impulsivity that make flow possible. The effortless, high concentration is a result of an interactive relationship between attentional

circuits and emotional-motivational systems in the brain [8].

Hoffman and Novak [25] introduced the notion of flow into the Internet user experience to explain how flow happens when consumers interact with online content on the web. They argue that during an online experience, both the user-system interaction and the activity, performed through the Internet, compete for the user's attention. Consequently, the user's expertise for using online systems including SM applications, as well as its skills for the goal-directed activity such as the discussion about course subjects, are both challenged during SM usage. Hoffman and Novak [25] argue that whereas expert Internet users who can easily employ complex online applications may experience flow during the usage of complex and challenging applications, new users may experience flow when engaging in activities they have higher involvement with, like navigating a corporate website or interacting with other users in chatrooms and online groups.

Scholars have studied the occurrence of flow in learning systems [36], SM spaces [44], learning management systems [32] and game-based learning tools such as computer games that their goal is in line with the learning goal of students like classifying objects [28]. Pelet et al. argue that the experience of SM usage can seep into the experience of flow state. Their study shows that SM usage creates a sense of telepresence [44]. Hoffman and Novak define telepresence as a state in which users forget about their physical surroundings and feel themselves present in the online space wherein they create content and interact with one another [25]. According to Pelet et al. [44], an information exchange with other SM members in SM spaces may arouse the users and tempt them to test their intelligence against others. Hence, SM has the potential to defy the users' expertise and knowledge to the borders and create a high order of balance between challenges and capabilities. Their study showed that SM spaces that provide control over the task at hand and arouse the users, and make the users curious and concentrated, could make these users feel an experience of the flow state and thus, make users engaged in the SM spaces even deeper [44].

Leclercq et al. [34] refer to knowledge sharing, learning, and joyful experience as antecedents of customer engagement that leads to value co-creation in online spaces. The uncertainty associated with gameful situations makes members engaged in the context [34]. Thus, the challenge, concentration, and joy of the flow state can lead to higher engagement of learners in course-related SM groups. Accordingly, this research hypothesizes that:

**H5: Experiencing the state of flow, positively affects the engagement in course-related SM groups.**

Scholars have introduced a complex dimension of entertainment and wellbeing that is far from providing pure fun: eudaimonism. The eudaimonic form of entertainment refers to the human tendency to enjoy engaging in activities that help them realize their potential and find meaning in life. Studies have shown that users engage in SM to entertain themselves from both hedonic and eudaimonic perspectives [42]. Hence, when learners join online groups on SM with their classmates, s motivations increase their active participation. Thus, this research hypothesizes that:

**H6: Eudaimonic motivation positively affects engagement in course-related SM groups.**

As individuals motivated by eudaimonism are more inclined to expand their capabilities and find meaning in their activities, they are more prone to engage in discussions that challenge their skills in SM groups. Thus, this research hypothesizes that:

**H7: Eudaimonism positively affects the experience of flow state in course-related SM groups.**

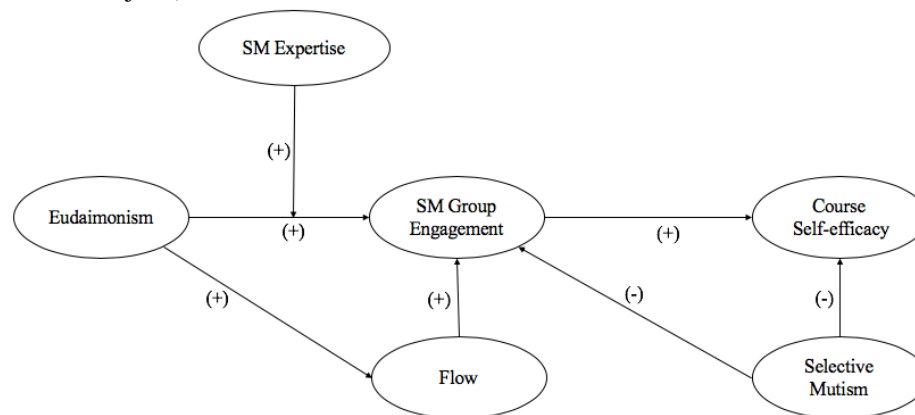
When interacting in online environments, users interact through the medium with other members, or they interact with the medium. Though interacting with other members creates challenge and defines the capabilities of the user about the focal subject of engagement (*i.e.*, course subjects), interaction with the

medium reflects human-machine interactivity and imposes challenges on the user concerning his/her system expertise [25]. In this regard, both goal-directed activities (course related subjects) and human-medium interaction (interacting with SM context) compete for the concentration and attention of the user. Thus, the expertise of the user in the SM usage can moderate the effects of the flow state as well as his/her eudaimonic motivation and selective mutism on the engagement of students with course-related issues and subjects through SM. Thus, this research hypothesizes that:

**H8: SM expertise, moderates the relationship between eudaimonic motivation and SM engagement on course subjects.**

### 3. The theoretical model of the research

Based on the above hypothesis, following theoretical model of the research is presented (Figure 1):



**Figure 1: conceptual model of the research**

## 4. Methodology

### 4.1. Data collection and sampling

Theoretical model of the research was developed through the discussions of the researchers about the way SM engagement has changed the self-efficacy of their students. The researchers who teach in higher education institutions observed that silent students differ in their online and offline engagement with the courses. In order to find a better understanding, the

researchers delved into relevant literature and suggested the theoretical model of research.

Data for testing the model are collected through an online questionnaire based on a landing page, to facilitate the sharing on SM and maximize the response rate. The landing page provides the participants with a brief instruction on how the questionnaire needs to be

filled out. Descriptions about an incentive equal to USD30 randomly rewarded to a participant and clarification for anonymity are available on the landing page. Researchers invited SM users to participate in the research via a recorded video and posted the video on Instagram pages<sup>1</sup> of several influencers. The influencers asked their followers to participate via their Instagram stories. The researchers approached the participants through WhatsApp and Telegram channels, groups, Facebook and LinkedIn pages with thousands of followers. They also asked their colleagues and students to share the invitation with course-related SM groups. During one week, approximately 2450 potential respondents clicked the link, from which 321 completed and submitted the questionnaire. Appendix (A) shows the scales of the questionnaire.

.839 to .933, all higher than the lower acceptable level of 0.7, confirming the internal reliability of each scale. For the respondents in this study, 48.5% are female, 40.3% are 25-34 years old, 40 % are 18-24 years old, 16.7% are 35-44 years old, 37% have an undergraduate degree, 35.3% hold a master degree, and 9.3% of respondents hold a Ph.D. degree.

### 6.1. Measurement model analysis

The measurement model containing five latent variables is analyzed to measure convergent and discriminant validity. The composite reliability (CR) of all the constructs are higher than 0.8, and the average variance extracted (AVE) of all variables exceed the recommended 0.5 [19]. The confirmatory factor analysis shows a good fit, with  $\chi^2/df = 1.501$ , CFI=0.972, GFI=0.904, TLI= 0.967, RMR=0.065,

	CR	AVE	MSV	ASV	flow	skill	selective	engage	efficacy	eudaimo
<b>flow</b>	0.930	0.690	0.401	0.118	0.831					
<b>skill</b>	0.866	0.619	0.036	0.016	0.035	0.787				
<b>mutism</b>	0.821	0.536	0.311	0.084	-0.108	-0.138	0.732			
<b>engage</b>	0.860	0.677	0.137	0.079	0.370	0.191	-0.235	0.823		
<b>efficacy</b>	0.829	0.552	0.311	0.123	0.201	0.159	-0.558	0.234	0.743	
<b>eudaimo</b>	0.922	0.747	0.401	0.144	0.633	-0.013	-0.150	0.337	0.428	0.864

**Table 1: convergent and discriminant validity of the constructs**

## 6. Results

The present study uses two-step structural equation modeling with the use of AMOS 24 software to analyze the data. Multivariate normality, multicollinearity, and positive definiteness are analyzed using SPSS 19 software. The collinearity statistics do not show any tolerance less than .01 or any VIF higher than 10, proving that data does not violate the assumption of collinearity. The determinant of the correlation matrix is 1.95, satisfying the positive definiteness condition. After analyzing the 321 data for Mahalanobis distance, 41 responses were recognized as outliers and were eliminated from the analysis, leaving the research data with 280 responses, satisfying the condition of multivariate normality. The Cronbach alphas of all the first-order latent variables range from

RMSEA=0.042. Constructs of the model were evaluated for discriminant validity, comparing the correlations and squared root of AVE scores for each of the pairwise constructs (Table 1). As none of the correlations exceed the squared root of AVE for each pairwise constructs, discriminant validity is confirmed, indicating that the constructs measure different concepts. Thus Fornier and Larcker [19] criteria of discriminant validity are satisfied.

### 6.2. Structural model analysis

Variance analysis for the sample size of 280 for the initial model has a good model fit. Table 2 summarizes the results of model fit and hypothesis validation. In order to examine the indirect effects, SEM bootstrap test of indirect effects, with a bias-corrected bootstrap confidence interval of 0.95 is performed using AMOS software. This test has been proven to be a valid examination of mediating effects [44]. Results show that the indirect (mediated) effect of “Selective Mutism” on “Course Self-Efficacy” is -.033. That is, due to the indirect (mediated) effect of selective

<sup>1</sup> The Instagram pages of the influencers that posted the invitation include: @goOd\_moOd, @ghanoon\_Jazb @phdwriteupandfun1, @per\_fact @marziyehnikkhah\_fartak

mutism on efficacy, when selective mutism goes up by 1, efficacy goes down by 0.033. Eudaimonism also indirectly affects Course Self-Efficacy (0.035). The indirect effect of Flow on Course Self-Efficacy is

0.029. The moderating effect of SM skills on the relationship between Eudaimonism and SM Engagement was not significant.

DV	Mediating/moderating	IV	H	$\beta$	S.E.	t	P	test
efficacy	<---	engagement	H1	0.207	.037	3.250	**	validated
efficacy	<---	selective mutism	H2	-0.509	.074	-6.083	***	validated
engagement	<---	selective mutism	H3	-0.179	.098	-2.849	**	validated
efficacy	<engagement	<selective mutism	H4	0.033			*	validated
engagement	<---	flow	H5	0.258	.073	3.334	***	validated
engagement	<---	eudaimonism	H6	0.178	.067	2.265	*	validated
flow	<---	eudaimonism	H7	0.634	.056	10.193	***	validated
eud.& eng.	moderating	SM expertise	H8	-0.023	.067	-0.394	0.694	n.s.

\*\*\*: P<0.001, \*\* P<0.01, \*:\*\*\* P<0.05, n.s.: not significant

Model Fit: Cmin/df = 1.807, GFI= .907, NFI= .925, CFI= .965, TLI= .958, RMSEA= .054

**Table 2: Summary of the results**

## 7. Conclusions

The research model and its relationships suggest that users' motivation for interacting in the course-related SM groups, indirectly leverage the course self-efficacy. The model suggests that experiencing flow state and eudaimonic motivation encourage engaging in the course-related SM groups. Eudaimonism strongly and significantly ( $\beta= 0.634$ ,  $P<0.001$ ) increases the chances of students to experience the flow state when engaging in the course-related SM groups. When in the flow state, students engage in course-related activities in SM that satisfy their curiosity and challenge their skills to the limits and make them lose their sense of time [44]. Being motivated by eudaimonism means students are inspired use SM in order to learn, expand their skills, and actualize their potentials [53], that result in engaging in activities that lead to experiencing the state of flow in SM. Experiencing the state of flow ( $\beta=0.258$   $P<0.001$ ) and eudaimonism ( $\beta=0.178$   $P<0.001$ ) directly and positively affect engagement in the course-related SM groups. Eudaimonism also indirectly affects SM engagement (0.14). Selective mutism negatively and strongly affects course self-efficacy ( $\beta=0.509$   $P<0.001$ ). The indirect effect of selective mutism on course self-efficacy (0.033) is considerably weaker than its direct effect ( $\beta=0.509$ ). Thus, though silent students, who do not ask their questions in the classroom or talk in front of the classmates, will also be less engaged in the course-related SM groups ( $\beta= -$

0.179  $P<0.001$ ), their engagement in the SM groups will mediate the negative effect of their silence.

Results of this research are in line with research literature in psychology and SM usage (e.g., [44]; [9]). Results of the psychology studies [17], [33] show that silent students will have lower self-efficacy. The empirical study conducted by Liao [36] shows that the flow state positively affects learning and engagement in electronic learning systems. Pelet et al. [44] show that the challenge, control, and curiosity experienced in SM can encourage SM engagement. Motivated by the pleasurable mental state of "flow" and eudaimonic entertainment that relates to autonomy and finding meaning in an activity [53], learners engage in creating content and discuss in SM groups. These results are in line with gamification research findings [35], [34] that introduces enjoyment, cooperation, contribution in the society, and curiosity as motivations to engage in co-creation communities.

The present research hypothesizes that selective mutism negatively affects the course self-efficacy. However, users' engagement in course-related SM groups, mediates this adverse effect. The mediating effect of SM engagement means that SM gives some spaces to silent students to engage with course subjects in a less stressing environment provided by SM. These findings are in line with Hampton et al. [22] and Hammick and Lee [21] and Fernandez et al. [16] arguments about how SM help socially anxious individuals by reducing their anxiety to communicate with their peers. SM also allows silent students to follow the contents provided by their classmates in SM groups without leaving a trace of them. This finding is

in line with [2] that contend that shy people use instant messaging applications to supplement their social interactions. Examples of such messaging applications are Telegram, Facebook Messenger, WhatsApp, Trello, Slack, WeChat, Renren and so on.

Findings of the research, are in line with Leclercq et al. [35], that recognized a group of silent, invisible users that actively engage in online communities and follow the content without leaving a trace. The SM engagement of such users with the group content helps them reflect on the course subjects and the learned materials in order to engage in active learning, that leads to increased self-efficacy [12].

This research can help researchers, professors, instructors, teachers and people in charge of the learning organizations to encourage the participation of students in online groups and SM. This research gives teachers ideas about how they can make SM groups more engaging with adding some challenges to the SM groups and making it joyful and stimulating enough to facilitate the experience of flow state. This research also gives teachers clues about making the groups

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fulfilling and knowledge dense enough, through which students can fulfill their Eudaimonic motivations.

This paper proposed and tested a model for increasing course self-efficacy through engagement in course-related SM groups. The engagement, motivated by experiencing the state of flow and users' Eudaimonic motivation, positively affects the course self-efficacy and moderates the adverse effects of students' silence on course self-efficacy.

Like any research, this paper has some limits. For example, apart from social anxiety, this study does not show why some users might follow the contents created by others, while some others engage in providing content. This research does not show the life cycle of SM groups.

Future research can study the process through which students create SM groups and keep them alive. Future research can also investigate other motivations for course-related SM engagement and the conditions through which flow can happen in course-related SM groups.

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## Appendix (A) Questionnaire

### Selective mutism - scale: adapted from [3]

Thinking about the occasions you could communicate with your teacher (R)

1. When the professor asks me a question, I feel confident to answer
2. When appropriate, I ask the professor questions
3. When appropriate, I speak with most professors or staff in the institution
4. When appropriate, I speak in group or in front of the class

### Group engagement – scale: adapted from [39]

Please think about a group in a social media you have joined with your classmates and discuss course-related ideas and issues

1. I am motivated to participate in the course-related social media group's discussions because I feel better afterwards
2. I am motivated to respond to the requests of other members in the course-related social media group because I am able to support them
3. I often read the discussions of other members in the course-related social media group
4. I often browse the contents of the group to see if other members have talked about the course subjects

5. I often browse the content of the group to see if other members have uploaded course materials

### Flow experience – scale: adapted from [44]

Definition of flow: The word "flow" is used to describe a joyful state of mind, sometimes experienced by people who are deeply immersed in a challenging activity. When in flow, time may seem to stand still and nothing else seems to matter. Thinking about your own use of social media. – how strongly do you agree with these sentences:

1. I think I experience flow when participating in our course-related social media group
2. In general, I frequently experience "flow" when participating in group discussions, using course-related social media group
3. When following the contents of my classmates in the course-related social media group, I experience flow
4. When answering to questions of my classmates about course subjects in the course-related social media group, I experience flow
5. When expressing my ideas about course subjects in the course-related social media group I experience flow
6. I frequently lose track of time when I participate in the course-related social media group

### Course efficacy – scale: adapted from [24]

1. I think I can manage my time properly during this course
2. I think I can manage to perform my research assignments for this course
3. I think I can apply what I have learnt in real work situations
4. I think this course added to my knowledge

### Eudaimonia – scale: adapted from [52]

1. Participating in the course-related social media group helps me find out what my best potentials are
2. Participating in the course-related social media group helps me develop my potentials
3. Participating in the course-related social media group is worth investing my time and effort
4. Participating in the course-related social media group helps me find my purpose in life