

# Internalization and Externalization in the Classroom: How Do They Emerge and Why Is It Important?

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**Abstract—Work-in-Progress.** “I felt so dumb, and it's not fair that I cannot grasp this information to save my life, and other people can with no problem.” Why do some students feel empowered in the classroom, and feel they have control over their own learning, while others do not? Our qualitative investigation is a part of a larger mixed-methods study about students’ situational motivations in introductory STEM courses. We used grounded theory to analyze students’ responses to surveys about emotion, course relevance, and motivation. We investigated two emergent phenomena we called “internalization” and “externalization.” Our definitions of these are based on a student's perception of who or what influences the outcomes of their activities: the students themselves, or external factors such as the instructor, peers, or the educational system as a whole. Our findings indicate that (1) internalization correlates with cognitive autonomy, students’ perception of course content having high personal relevance, and group projects in project-based learning environments; and (2) externalization correlates with lecture-based environments and students’ perceptions of lack of personal relevance in the course content. Our analyses suggest that project-based learning environments may serve to empower students, but only when course content is found to be relevant.

**Keywords—***motivation, internalization, emotion, autonomy, empowerment, relevance, project-based learning.*

## I. INTRODUCTION

Agency and attribution are critically important concepts in self-motivated learning. Agency refers to learners’ locus of control, or beliefs about their ability to influence situations or environments that affect their lives [1]. Attribution concerns the psychological processes by which learners exercise agency through perceptions of causality, and the consequences of these perceptions on learner attitudes, behaviors, cognitions, and outcomes [2]. In general, positive engagement and desirable learning outcomes are realized when learners self-identify as empowered agents of their own learning, and when they demonstrate skill in directly connecting their actions to observable or experienced outcomes.

The concepts of agency and attribution are incorporated into many established theories that seek to explain learner engagement and drive in classroom settings. Social cognitive theories describe how students’ exercise of agency, via development and activation of efficacy beliefs, directly influences their selection of cognitive, motivational, and affective processes, and how these choices lead to differential

learning outcomes [1,3]. The relationships among self-efficacy, engagement, and outcomes are strong: at all levels of education, the research shows significant positive correlational and causal links between students’ self-efficacy and their task value, self-regulation, cognitive strategy use, and performance in learning [e.g., 4-8].

Self-determination theory (SDT) for motivation captures attribution with its perceived locus of causality (PLOC) concept, which describes how individuals may perceive themselves as originators of their own behaviors (internal PLOC), or as “pawns” to outside forces in the environment (external PLOC). SDT places external to internal loci of causality along a motivational continuum, ranging from amotivation and external regulation (external PLOC), to identified regulation and intrinsic motivation (internal PLOC). The extent to which individuals adopt external PLOC or internal PLOC is influenced by personal, social, and contextual variables [9]. If the environmental conditions are positive, learners may personally endorse and adopt values, goals, or regulations from the external environment through a process of *internalization* [10]. In SDT, motivations that are adopted and aligned with one’s own goals and values are described as “identified regulations,” while motivations based on a sense of personal interest and enjoyment are said to be “intrinsic” [9].

Attribution theory directly explores how individuals develop perceptions of causality—explanations of why events and outcomes occur—and how these perceptions influence, and are influenced by personal and contextual variables in the learning environment [2,11]. Attribution theory frameworks map learners’ evaluation of classroom events and educational outcomes to positive emotions such as pride, happiness, and gratitude, and to negative feelings such as anger, hopelessness, guilt, frustration, and shame [11]. Both internal personal factors (e.g., beliefs, self-concept, expectations for success) and external contextual factors (e.g., instructor verbal feedback, rewards, pressure, constraints) serve as antecedents to students’ causal attributions [11,12], but the specific way different individuals process and act on these internal and external factors can have dramatic effects on their engagement, outcomes, and subjective well-being [12-14].

Developing a deeper understanding of student agency and attribution in STEM classrooms is important, given the potent ways in which course contexts shape these perceptions, and how perceptions of agency and attribution, in turn, guide students’ goals, effort, emotions, and persistence, and

ultimately their learning performance and mastery [15,16]. In this study, we qualitatively examine emergent constructs resonant with student agency and attribution in several STEM undergraduate courses that represent a range of pedagogies, from traditional lecture to project-based learning. Specifically, we consider students' descriptions of the course experience through the emergent constructs of student *internalization* and *externalization*, and we examine how students connect these processes to their own emotional, cognitive, and motivational responses in the different course setting.

## II. METHODS

Our qualitative investigation is a part of a larger mixed-methods study about students' situational motivations in introductory STEM courses. This paper describes analysis of data from three study sites: "Amethyst," a small private college that privileges project-based environments; "Teal," a large state university that utilizes both traditional and non-traditional methods; and "Gray," a more traditional medium size liberal arts university. We examined one course at each study site, which became our unit of analysis.

At Amethyst, our unit of analysis was a thermodynamics class, required for all students but one. This was a small class that used both traditional (e.g., lectures) and nontraditional pedagogical approaches (i.e., one large project), with problem sets and projects as performance assessment methods. At Teal, we investigated a large materials science and engineering class, required for all but one student. The course included both lectures and projects with assessments based on projects, problem sets, and a final exam. At Gray, we studied a medium size chemistry class (43 enrolled), required for all students. The course included lectures, labs, problem sets, and exams; assessment was based on exams and homework assignments.

A total of 37 students, science, math and engineering majors, participated in our study: six women and one man from Amethyst, eight women and ten men from Teal, and seven women and five men from Gray. A seven-item open-ended survey about class activities, students' emotions and motivations, perception of course experience relevance, and performance was administered to students biweekly.

Grounded Theory approach was used for analysis of the survey responses. We used the constant comparative method to refine our codebook and identify emergent categories and themes [17,18]. To ensure reliability, two coders iteratively compared and discussed coding schemes. Validity was achieved through discussions and reevaluations of the codebook, categorization, and emergent theme identification.

## III. RESULTS

### A. Internalization and Externalization: Definitions and General Findings Across Courses

We investigate two major emergent phenomena, "internalization" and "externalization." Our emergent definitions of these phenomena are based on students' perceptions of who or what influences the outcomes of their activities. We define internalization as students' perception

that they are the ones influencing the outcomes of their activities. Externalization is defined as students' perception that the outcomes of their work are influenced by external factors such as the instructor, peers, or the educational system as a whole.

Discourse consistent with internalization mostly co-occurs with student descriptions of personal responsibility, immediate plans of action for operationalizing a task and, to a lesser degree, with perceived cognitive autonomy, reflection on learning process, high self-efficacy, and effort-outcome causality (the student's observation that past effort has resulted in the desired outcome). These qualitative relationships reported by students are not surprising, in light of existing educational literature. Bandura (1989) emphasizes that "people's beliefs about their capabilities to exercise control over events that affect their lives" is a powerful mechanism for building personal agency [1]. Quantitative research in self-regulation and motivation illustrates how autonomy support, internalized goals, and self-efficacy interact positively with learners' metacognitive self-regulatory processes [3,5,7,8,20].

Our findings indicate that discourse consistent with externalization is more likely to co-occur with blame, wishful thinking, excuses, and passive voice. Students use discourse consistent with externalization when they perceive that course content lacks personal relevance, which occurs more often in lecture-based activities. Conversely, internalization appears when class material has high personal relevance and students are allowed more autonomy in deciding what and how to study. These findings are resonant with SDT [9] and expectancy-value theory [21]: students appraise classroom conditions relative to their own perceptions of value or importance. Choice, control, and sense of relevance can lead to internalized engagement, while failure to find relevance may force learners to seek achievement via more externalized forms of regulation, and feel negative emotions [13,21,22].

We also find that students' sense of personal responsibility is linked to generation of strategies to operationalize their learning plans. In describing a desirable course outcome, participants draw a direct connection between an immediate plan of action and such outcome. Of note is that although personal responsibility may take the form of external obligation (as in a Teal student Kyle's comment, "Group projects help keep me motivated because... there are others counting on me") and co-occurs with extrinsic motivation, it co-occurs far more frequently with internalization-related discourse. The co-occurrence of external expectations and internalized discourse may represent a situation where learners have partially integrated social inputs as a result of peer relationship building. Consistent with literature, a sense of social connection is known to positively contribute to internalized behaviors; although others' expectations can sometimes serve to undermine more positive forms of motivation [9,23].

In all three course settings, we qualitatively find a link between discourse consistent with internalization and high self-efficacy, as well as a weaker positive correlation between externalization and low self-efficacy, which is mostly

observed in Gray. Where internalization co-occurs with high sense of self-efficacy, students express a plan of action for operationalizing a task in the short term or observe effort-outcome causality. For example:

*I felt confident in my work this week. I began studying for the final, and reviewing the information was very helpful. I think I will be prepared for tomorrow's exam.* (Tori, Teal)

Consistent with prior work in self-regulated learning and personal agency [1,3-8,15], this suggests that internalization may have a role in fostering development of high self-efficacy, as well as cognitive self-regulatory strategy use, in students.

#### *B. Internalization and Externalization: Differences Across Three Classroom Settings*

Our findings indicate different amounts of internalization and externalization reported by students in the three different courses. These differences, discussed below for each course, are positively correlated with variation in perceived autonomy and sense of course relevance.

1) *Amethyst*: We find Amethyst to have the highest ratio of internalization to externalization instances. On average, student responses display over twice as many internalization as externalization instances. All Amethyst students stated that they find the course content and the projects relevant. As Christen describes,

*Having interesting problems with real-world application contributed a lot to my motivation. It becomes less of 'let me do this problem so I can learn Thermodynamics' and more of 'I want to learn how this system works, and Thermodynamics just happens to be what I use to figure that out.'* (Christen, Amethyst)

Notably, analysis of students' survey responses shows that Amethyst students experience much more autonomy in their learning activities than students at Teal and Gray. At Amethyst, students "liked the freedom [they] had for choosing to model basically any thermodynamic system that [they] wanted" and they "got to work on something that [they] were all interested in" (Christen, Amethyst). As motivation research indicates, learners must perceive autonomy support in the classroom in order to fully internalize the learning experience [9] and develop a sense of self-efficacy and instrumentality in the classroom [24]. Students are known to develop positive perceptions of autonomy support in project-based settings [25], and the presence of one large project in the Amethyst course appears to have triggered this response.

Instances of externalization are found more rarely at Amethyst, less than half as many per person as in Teal and Gray. The instances when students use discourse consistent with externalization are associated with frustration about unclear directions and project work challenges. Interestingly, a three-week-long period of higher externalization occurs during the weeks before and after spring break, when students seem to be stressed and unmotivated due to high workload. In the words of Margaret,

*As [this was] the week before spring break, I was particularly unmotivated to start work and exhausted in general. I didn't start the problem set until after it was due because I... couldn't find the motivation to begin.* (Margaret, Amethyst)

After spring break, some students describe "working from 9AM-12AM and still not getting everything done" (Francesca, Amethyst). Exhaustion, the term used by several Amethyst students, may have been a cause of externalization in Amethyst. This is consistent with existing literature indicating that externalized goals and behaviors are attributed to stress and anxiety. [9,26,27]; as such, it is important to understand when and how these undesirable situations develop in different classroom activities.

2) *Teal*: Although Teal course design is relatively similar to Amethyst in its inclusion of projects, we identify more instances of externalization here. Internalization and externalization occur with almost the same frequency in this setting. Most of the externalization is correlated with students' perception of course relevance and lack of choice, as well as the presence of anxiety associated with deliverables for this and other courses. Over half of the students (11 out of 18) find the projects irrelevant. For example, according to Deidra, the project is more about art than materials science and is perceived as a waste of time:

*I feel frustrated and I feel a little bit like my time is being wasted—we haven't even finished learning everything we were scheduled to learn... I don't think that I can learn anything from this art project and it seems like busy work. With this project, I mainly feel bored, frustrated, and a little annoyed.* (Deidra, Teal)

In addition, 13 out of 18 students state that they find class content neither interesting nor relevant to their future, which co-occurs with increased instances of externalization in comparison to Amethyst. Students also feel frustrated when the instructor gives seemingly inconsistent instructions making it difficult to do well on a project:

*I was frustrated that the instructor encouraged us to use pictures and said it did not matter if the point got across, but then when we were given the rubrics it only mattered if the point got across.* (Lily, Teal)

The word 'frustration' is a good in vivo proxy for externalization. This may be because it connotes helplessness, which serves as the cause of a negative feeling, or possibly anger, which is, according to literature, sometimes associated with task frustration and teacher control [27].

Externalization peaks at the end of the large group project at Teal. At this time, students are stressed and tired and they are also more likely to blame their teammates for difficulties (4 students did so)—which we do not observe at Amethyst. As a typical example, Luke says, "One of my teammates is a total deadbeat and has not replied to any calls to help out." This week's stress also contributes to externalization, especially excuses for poor performance:

*I felt really tired this week. The earliness of this class did not help either. I think the stress of this week is affecting my ability to perform in my academics.* (Alfonso, Teal)

While externalization peaks at the end of the large group project at Teal, internalization is higher at the beginning of the project work. This may be partially due to the fact that students are given responsibility and freedom to schedule work time in the early stages of the project. Teal students also display much more internalization and less externalization during the finals study period because, in the words of one student, “we knew exactly what to study, and I was therefore able to spend time just nailing down the topics which I did not know well” (Harvey, Teal). Perhaps because the students are aware of what they would be tested on, they are more likely to have clear plans of action and higher self-efficacy. In other words, alignment between students’ conception of learning and their experience may be resulting in students embracing their course work; however, this may not necessarily mean that such environment allows for students’ development of self-regulation, autonomy, or even mastery [3-5,9,10], despite a possible perception of high performance (all Teal students report doing well on their final).

3) *Gray*: Internalization instances found in Gray students’ descriptions often contain immediate plans of action and as in other schools plans of action co-occur with high self-efficacy. For example, Claudette says that she has a plan of action regarding studying for her future exams:

*Seeing where I did well and places where I make mistakes, I now know how to better study for future exams. I know what to expect and what to focus my studies on. I feel that I am doing fairly well and now I know how to do even better on future exams.* (Claudette, Gray)

Similarly to Teal, about half (5 out of 12) of Gray students do not find the class relevant or interesting. Here, the lack of personal value or interest may serve as a source of externalization [5,10,21]. Most students take this class because it is required for the MCAT. In Cordelia’s words,

*This course is not relevant to anything that I want to do. Doctors don't use general chemistry. I just need it to take the MCAT and as a prerequisite for Medical School.* (Cordelia, Gray)

Discourse consistent with externalization also occurs as a result of stress and difficulty with finding the time and motivation to do assignments, whether in this course or in other courses. Samuel’s quote below typifies many Gray students’ responses (8 out of 12 mentioned similar feelings at least once):

*Hopelessness... because there's so much work in this class and all the other classes and it's so difficult to do everything and I don't think I can get it all done and get a good grade.* (Samuel, Gray)

Gray students are also likely to internalize blame. For example, May states, “I wish I would have studied more for this class so I would not have to study as much this week coming up.” Moreover, most Gray students are unwilling to explicitly blame their instructor for scheduling conflicts and

difficult assignments, but some students imply teacher responsibility for negative situations. Claudette, for example, explains that “it was frustrating to have to do homework when [they] have not been taught the majority of the material” (Claudette, Gray). Here, the student uses passive voice rather than specifying who did not teach them relevant content. Although the specific reasons for this response (e.g., anxiety, low self-efficacy, low performance) are unknown, according to literature, this “passive failure” [28] mode of external attribution is not expected to provide a positive condition for engagement in learning. Notably, all but one Gray student displaying this implicit teacher blaming behavior are women. Gray is unique in this way; we do not find a similar gendered pattern of responses at either Teal or Amethyst.

#### IV. CONCLUSIONS AND IMPLICATIONS

This work combines existing frameworks into a cohesive narrative for considering students’ perceptions of empowerment, based on the extent to which students embrace internalized or externalized explanations of their learning experiences and outcomes. Our findings suggest that pedagogy influences internalization and externalization. Perceived relevance and autonomy both seem to be equally important in students’ development of agency and internalized motivations and behaviors. If students perceive a lack of personal value or choice, they develop negative affect and exhibit more externalization. Additionally, when students describe being overworked, they are likely to feel disempowered. Since internalization correlates with high self-efficacy, it may be important to create multiple opportunities for students to gain a sense of progress, improvement, and anticipated success in their learning. We posit that class structures that allow students autonomy and support development of personal responsibility and relevance should help increase internalization and decrease externalization. Project work is one such structure, and when executed well, project work may decrease externalization. The simple presence of project work, however, may not be enough to increase internalization or decrease externalization: projects need to be designed to trigger internalized relevance, self-efficacy, and autonomy.

Although students may be able to discover ways to become empowered in the class through finding personal relevance and making plans of action, they perceive that the instructors are the ones making decisions about course content and format. Conversations with students about how instructors influence course content, structure, and environment, and allowing students’ voices to be heard may help to empower students in the learning process. Therefore, creating classroom structures that empower students to find their own sense of course relevance and autonomy may be a critical step in supporting students’ positive motivational attitudes.

#### ACKNOWLEDGMENT

This work was supported in part by grants from the National Science Foundation (DUE #1445950, DUE #1322684, and DUE #1156832).

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