Students' Perceived Changes of Learning Conditions During Covid-19: The Role of Internal Resource Management Strategies, Intrinsic Motivation, and Preferences for Lesson Formats

Jennifer Paetsch & Anne Schlosser

EARLI SIG 1&4 (29.06.2022)

Most face-to-face courses replaced by **online education/remote instruction** (Crawford et al., 2020, Marioni et al., 2020).

Many creative digital solutions for distance teaching quickly emerged in response to the pandemic.

Two different online learning formats:

|	
asynchronous online learning independent of time and place	**synchronous online learning** independent of location, but at the same time

Students' adaption to emergency remote learning

Students were required to plan, monitor, and control their learning processes more autonomously.

- adequate **self-regulated learning (SRL) strategies** (Zimmermann, 2002; Naujoks et al., 2021).

- Students noted significant obstacles to **organizing their learning, keeping track of tasks, managing their time, adhering to deadlines,** and **regulating their attention and efforts** (Pelikan, et al., 2021, Biwer et al., 2021).

- Students reported **being less motivated** by online than face-to-face education and also rated their **general educational experience lower** (Biwer et al., 2021).

Student Perceptions of Learning Conditions
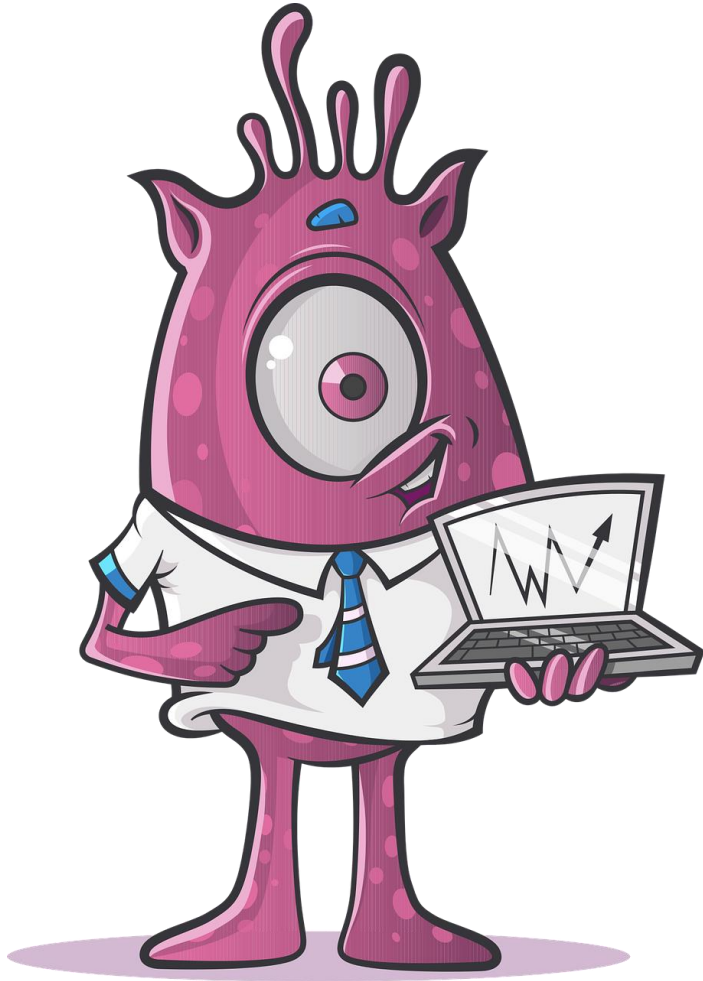
Student's perception of their learning conditions is a relevant influencing factor for their individual use of learning opportunities (Gruber et al., 2010; Seidel and Prenzel, 2004).

Prenzel et al. (2002) summarized, that students are supported in their needs if they perceive (a) **relevance** of content, (b) instructional **quality**, (c) **teacher enthusiasm** in teaching, (d) **social relatedness,** (e) **support** of competence, and (f) support of autonomy (Deci & Ryan, 2002).

Research Questions

1. Is there a relationship between participants' **internal regulation strategies** and students' **perceived changes of learning conditions** during online semester?

2. Is there a **positive** relationship between **digital lesson format-preferences** and students' perceived changes of the learning conditions?

3. Is there a **negative** relationship between **face-to face lesson format-preferences** and students' perceived changes of the learning conditions?

| Attention |
| Effort |
| Time management |
| Intrinsic motivation |

Internal regulation strategies

| Relevance |
| Quality |
| Support |
| Social relatedness |

Perceived changes of learning conditions during online-semester
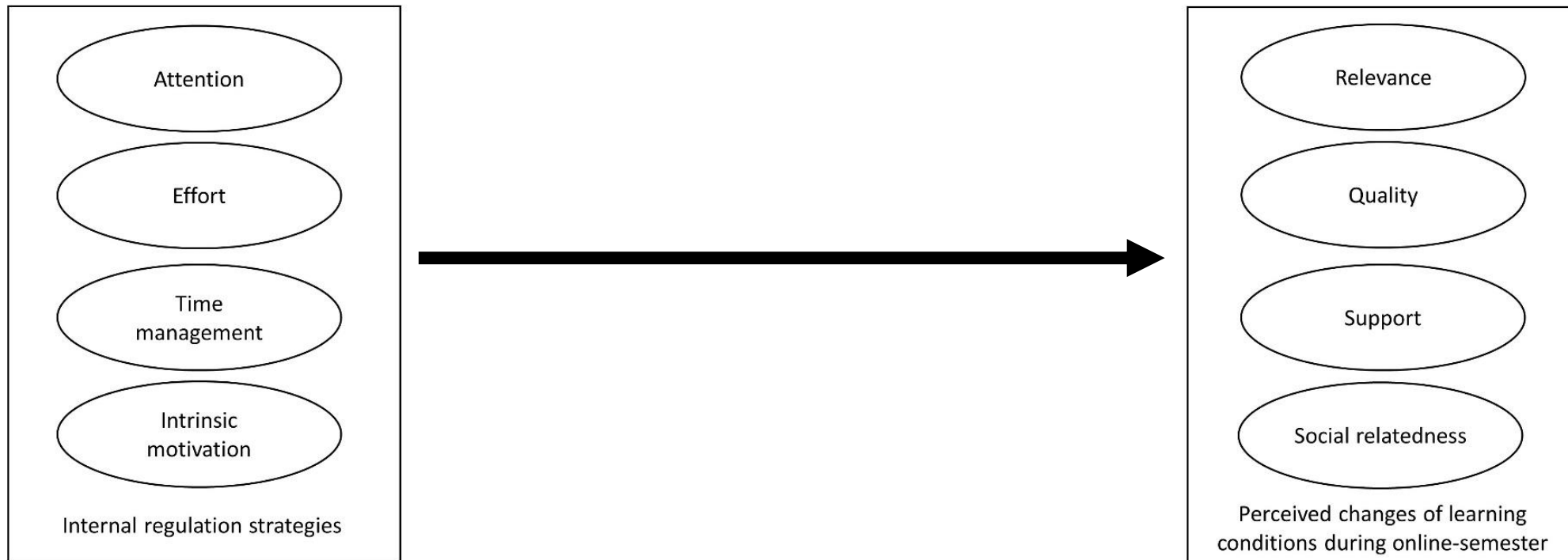
Sample
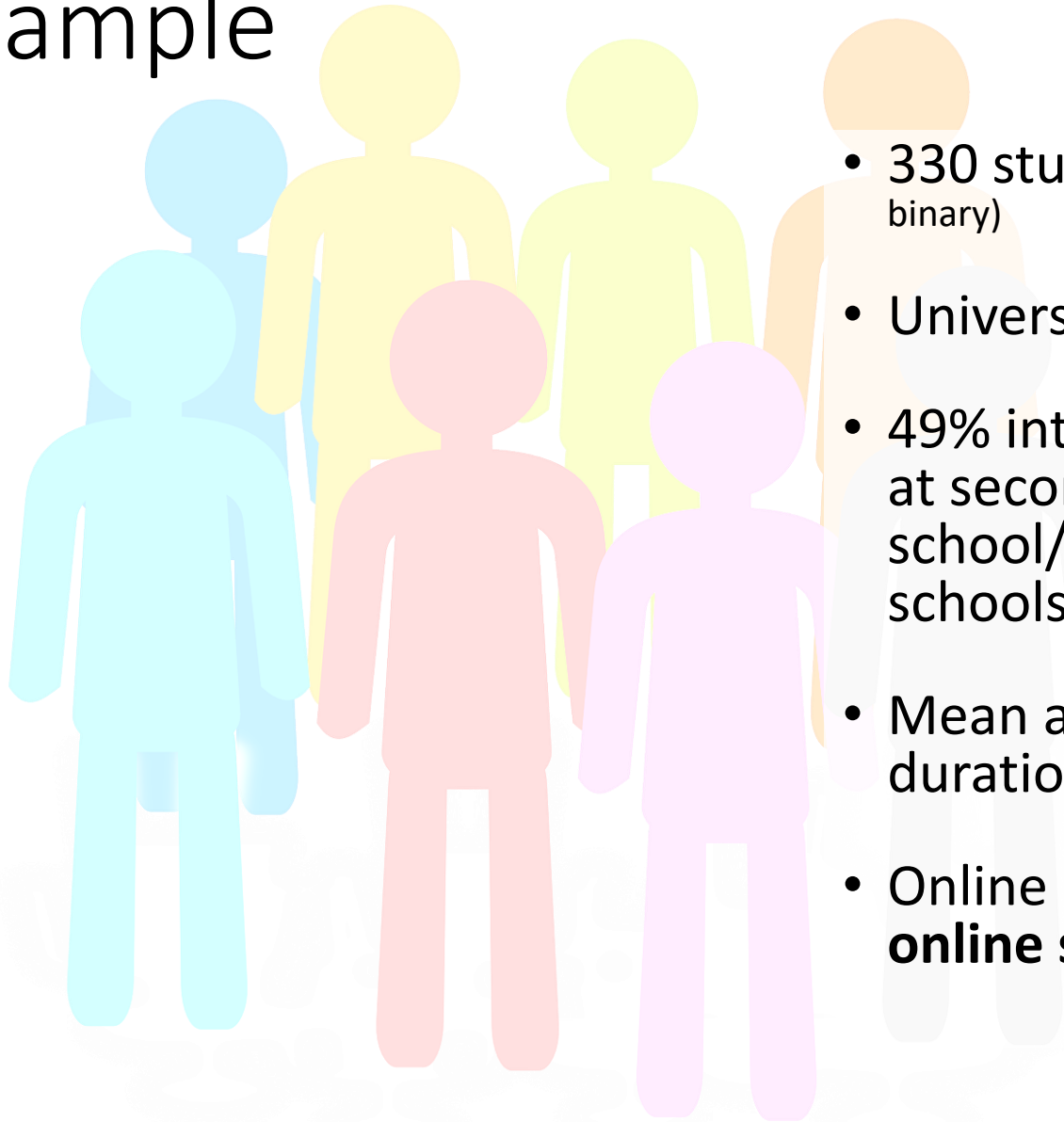
- 330 student teachers (85% female, 14% male, and 1% non-binary)

- University of Bamberg

- 49% intended to work in elementary school, 13% at secondary school/middle school, 22% at high school/gymnasium, and 17% at vocational schools.

- Mean age 22.5 years (SD = 3.1), mean study duration 5.3 semesters (SD = 2.8)

- Online survey administered **at the end of the first online semester, in July 2020.**

Measures

Perceived Changes of Learning Conditions During the Online Semester (cf., Dalehefte et al., 2021)

Subscales: **Perceived relevance** (3 items, α =.79), **Perceived quality** (3 items, α =.72), **Perceived support** (5 items, α =.82), **Perceived social relatedness** (2 items, α =.77)

Intrinsic Motivation (cf., Müller and Bierg, 2018)

Motivational Regulation for Learning in University Students scale (SMR-LS; 3 items, , α =.70)

Strategies for Managing Internal Resources (cf., Klingsiek, 2018)

Subscales: **Attention** (3 items, α =.89), **Effort** (2 items, α =.62), **Time Management** (3 items, α =.81)

Preferences for Lesson Format

To what extent do you prefer the following types of instruction? – Synchronous, Asynchronous, Face-to-face (5-point-likert-scale)

Results

Please use the published version for citation:

Paetsch, J., and Schlosser, A. (2022). Student teachers' perceived changes of learning conditions during COVID-19: The role of internal resource management strategies, intrinsic motivation, and preferences for lesson formats. *Frontiers in Psychology,* 13:894431. doi: 10.3389/fpsyg.2022.894431

https://www.frontiersin.org/articles/10.3389/fpsyg.2022.894431/full

Descriptives

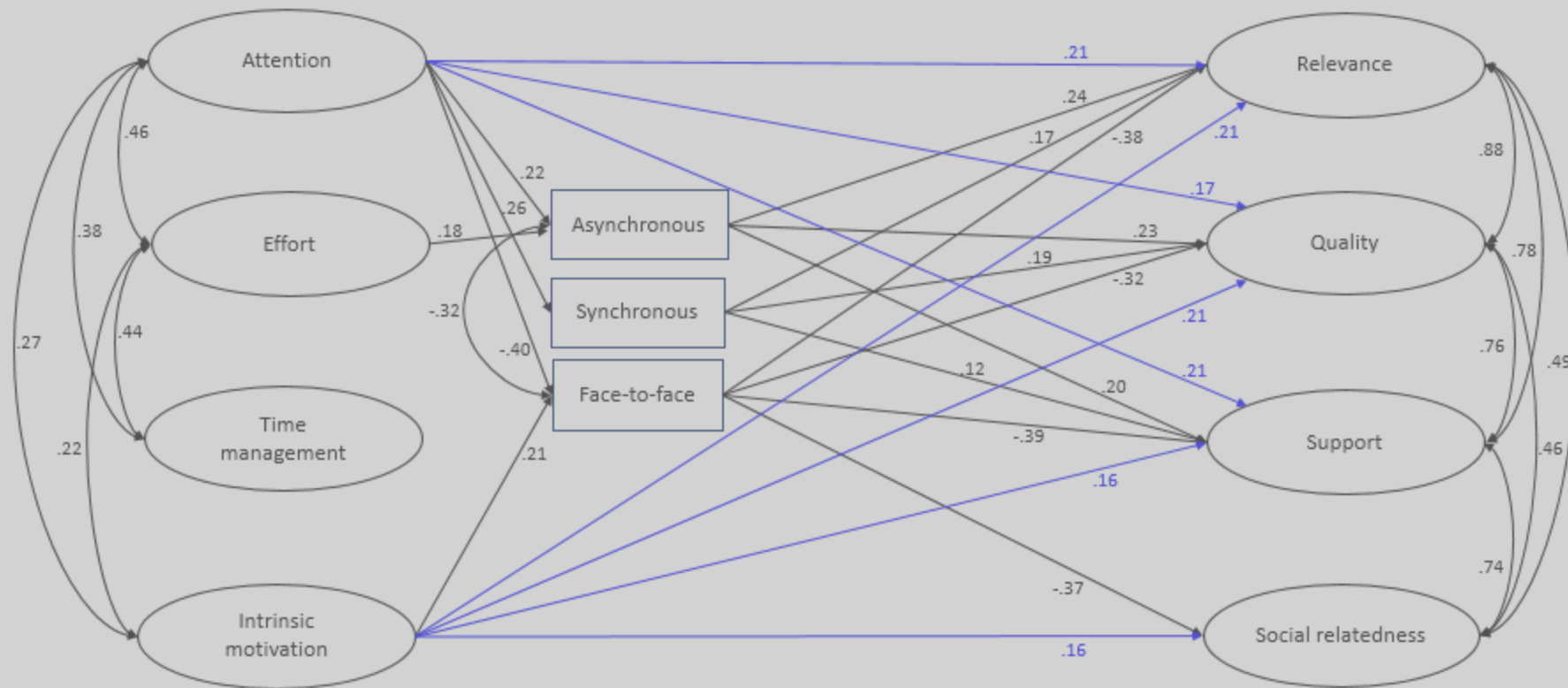|	Relevance	Quality	Support	Social Related.	Intrinsic Motiva.	Attention	Effort	Time	Asynchro nous	Synchron ous	Face-to-Face
Means	2.81	2.89	2.74	1.89	4.61	2.58	3.92	2.79	3.67	3.37	3.97
SD	0.75	0.77	0.73	0.87	1.32	1.04	0.77	1.10	1.24	1.05	1.16

5-point-likert-scale

Structural Equation Modelling

Figure 2 Structural equation model. Only paths p < .05 are displayed. See Table 3 for direct and indirect effects among variables. Blue = direct effects.

Discussion

Highest mean preferences for the face-to-face format and the lowest for the synchronous format.

Students who reported higher levels of **attention regulation** and **intrinsic motivation** evaluated the changes in relevance, quality, and support during online instruction as being more positive (see also Biwer et al., 2021).

Neither the regulation of effort nor of time management strategies predicted the perceived changes of learning conditions during online semester.

Preferences for both **digital** formats had notable and significant **positive** impacts on student perceptions of relevance, quality, and support.

Preferences for the **face-to-face** format had significant **negative** effects.

For social relatedness, there was only a significant negative effect for the face-to-face preference.

➢ Students who rated face-to-face formats more positively reported less social relatedness during distance learning.

➢ Students who preferred face-to-face learning situations might had a **lower readiness for digital learning** which led to difficulties in the satisfaction of the need for social relatedness during distance education.

Conclusion

Students' ability to concentrate and be attentive during learning without getting distracted and their learning enjoyment favored the adaption to the digital environment.

Findings support earlier research that highlights the connection between students' readiness for digital learning and successful adaption to online learning (Händel et al., 2020; Flores et al., 2021).

Enhancing social interaction in distance education by providing opportunities for communication in virtual learning groups may promote distance learning success (Broadbent & Poon, 2015).

Limitations

➢ The sample was not representative of the student population in Germany.

➢ Cross-sectional study design

➢ Student teachers' self-reports were compared with a pre-pandemic baseline, which means that the general level of perceptions of learning conditions was not considered.

➢ The perception of teacher enthusiasm, which is also an important factor in learning conditions (Prenzel et al., 2002), was not explored.

Thank you for your attention!

Please use the published version for citation:

Paetsch, J., and Schlosser, A. (2022). Student teachers' perceived changes of learning conditions during COVID-19: The role of internal resource management strategies, intrinsic motivation, and preferences for lesson formats. *Frontiers in Psychology,* 13:894431. doi: 10.3389/fpsyg.2022.894431

https://www.frontiersin.org/articles/10.3389/fpsyg.2022.8944 31/full

Prof. Dr. Jennifer Paetsch
jennifer.paetsch@uni-bamberg.de

References

Biwer, F., Wiradhany, W., oude Egbrink, M., Hospers, H., Wasenitz, S., Jansen, W., et al. (2021). Changes and adaptations: how university students self-regulate their online learning During the COVID-19 pandemic. *Front. Psychol.* 12:642593. doi: 10.3389/fpsyg.2021.642593

Broadbent, J. (2017). Comparing online and blended learner's self-regulated learning strategies and academic performance. *Internet High. Educ.* 33, 24–32. doi: 10.1016/j.iheduc.2017.01.004

Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., et al. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *J. Appl. Learn. Teach.* 3, 1–20. doi: 10.37074/jalt.2020.3.1.7

Dalehefte, I. M., and Munthe, E. (2020). "Preservice Teacher's perceptions of learning conditions during Covid-19," in *Paper presented at EARLI 2021*; August 23–27, 2021.

Deci, E. L., and Ryan, R. M. (eds.) (2002). "Overview of self-determination theory: an organismic dialectical perspective," in *Handbook of Self-Determination Research*. Rochester, NY: University of Rochester Press, 3–33.

Flores, M. A., Barros, A., Simão, A., Pereira, D., Flores, P., Fernandes, E., et al. (2021). Portuguese higher education students' adaptation to online teaching and learning in times of the COVID-19 pandemic: personal and contextual factors. *High. Educ.* 83, 1389–1408. doi: 10.1007/s10734-021-00748-x

Gruber, T., Fuß, S., Voss, R., and Gläser-Zikuda, M. (2010). Examining student satisfaction with higher education services: using a new measurement tool. Int. J. Public Sect. Manag. 23, 105–123. doi: 10.1108/09513551011022474

References

Händel, M., Stephan, M., Gläser-Zikuda, M., Kopp, B., Bedenlier, S., and Ziegler, A. (2020). Digital readiness and its effects on higher education students' socio-emotional perceptions in the context of the COVID-19 pandemic. *J. Res. Technol. Educ.* 54, 267–280. doi: 10.1080/15391523.2020.1846147

Klingsieck, K. B. (2018). Kurz und knapp–die Kurzskala des Fragebogens „Lernstrategien im 566 Studium "(LIST). *Zeitschrift für Pädagogische Psychologie* 32, 249–259. doi: 10.1024/1010-0652/a00023

Marinoni, G., Van't Land, H., and Jensen, T. (2020). *The Impact of Covid-19 on Higher Education Around the World*. Paris: International Association of Universities (IAU).

Naujoks, N., Bedenlier, S., Gläser-Zikuda, M., Kammerl, R., Kopp, B., Ziegler, A., et al. (2021). Self-regulated resource management in emergency remote higher education: status quo and predictors. *Front. Psychol.* 12:672741. doi: 10.3389/fpsyg.2021.672741

Pelikan, E. R., Lüftenegger, M., Holzer, J., Korlat, S., Spiel, C., and Schober, B. (2021a). Learning during COVID-19: the role of self-regulated learning, motivation, and procrastination for perceived competence. *Z. Erzieh.* 24, 393–418. doi: 10.1007/s11618-021-01002-x

Seidel, T., and Prenzel, M. (2004). "Muster unterrichtlicher Aktivitäten im Physikunterricht," in *Bildungsqualität von Schule: Lehrerprofessionalisierung, Unterrichtsentwicklung und Schülerförderung als Strategien der Qualitätsverbesserung*. eds. J. Doll and M. Prenzel (Münster, Germany: Waxmann), 177–194.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: historical background, methodological developments, and future prospects. *Am. Educ. Res. J.* 45, 166–183. doi: 10.3102/0002831207312909