



Education Quarterly Reviews

Guimba, W. D., Pascan, A. S., Nasser, M. P., Tamano, R. G., Sultan, R. M., Mojica, C. N., & Daguisonan, L. B. (2024). Adopting OBE Curriculum Approach: Faculty Members' Cognition, Experiences, Attitudes and Challenges. *Education Quarterly Reviews*, 7(2), 14-21.

ISSN 2621-5799

DOI: 10.31014/aior.1993.07.02.572

The online version of this article can be found at:
<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

The *Education Quarterly Reviews* is an Open Access publication. It may be read, copied, and distributed free of charge according to the conditions of the Creative Commons Attribution 4.0 International license.

The Asian Institute of Research *Education Quarterly Reviews* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of education, linguistics, literature, educational theory, research, and methodologies, curriculum, elementary and secondary education, higher education, foreign language education, teaching and learning, teacher education, education of special groups, and other fields of study related to education. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Education Quarterly Reviews* aims to facilitate scholarly work on recent theoretical and practical aspects of education.



ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide

Adopting OBE Curriculum Approach: University Faculty Members' Cognition, Experiences, Attitudes and Challenges

Wardah D. Guimba¹, Arief S. Pascan², Maihanie P. Nasser³, Roseniya G. Tamano⁴, Rohanie M. Sultan⁵,
Cherrilyn N. Mojica⁶, Lotis B. Daguisonan⁷

^{1,2,3,4,5,6,7} College of Education, Mindanao State University-Main Campus, Marawi City, Lanao del Sur, Philippines

Correspondence: Wardah D. Guimba, College of Education, Mindanao State University-Main Campus, Marawi City, Lanao del Sur, Philippines, E-mail: wardah.guimba@msumain.edu.ph

Abstract

As a result of the ever-changing educational environment, the curriculum as part of the educational system must also change. These changes led to the development of the Outcomes-Based Curriculum resulting in a better quality of education for the learners. Thus, this study aims to know the cognition, experiences, attitudes, and challenges encountered by the faculty members in adopting Outcomes-Based Education (OBE) as the new curriculum approach. The study used qualitative methodology by selecting eight faculty members from the different colleges of the Mindanao State University-Main Campus. The findings show the challenges that the participants experienced when doing curriculum revision following the OBE, which includes availability of facilities and resources, time allotment, the alignment of the curriculum in formulating the objectives, and the skills and expertise of the faculty members. Nevertheless, despite these challenges, it resulted into the success of the revision and the implementation of the new OBE curriculum.

Keywords: Outcomes-Based Education Curriculum, Cognition, Attitudes, Experiences, Challenges

1. Introduction

Outcomes-Based Education (OBE) is a model of education that rejects the traditional focus on what the school provides to students. The OBE curriculum aims to maximize student learning outcomes by developing their knowledge and skills. Also, it is aimed at enhancing the skills and abilities of every student, bringing competence, and guiding them with positive attitudes and values. It also provides expanded opportunities for the kids by following a student-centered learning approach. Teachers and K to 12 faculty need to give inputs that may include various innovative activities to support the students to reach the desired target in the future. In short, if properly implemented, OBE will increase accountability for both students and teachers.

Dela Cruz and Ortega (2016) defined OBE as a student-centered and curriculum-oriented approach in which the processes involved include curriculum layout, teaching, and evaluation to ensure desired outcomes are achieved. Outcomes-Based Education provides another way of assessing the performance of university students (Camello,

2014). Rubrics are used in the assessment of student outcomes, and they are also used in assessing the quality of performance of the learners (Gabuyo, 2012).

In the OBE, unlike in traditional planning, the assessment and teaching strategies will be dependent on the desired learning outcomes. The lessons that should be learned will be identified first and from these lessons, the outcomes will be identified. It is, therefore, an education, as well as a type of learning process where decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course (Davis, 2003). This was propounded by William Spady in the 90s to bring the focus of formal education to what the students learn rather than what they are taught. In other words, it is a system of education giving priority to ends, purpose, accomplishments, and results.

Moreover, according to Tucker (2004), Outcomes-Based Education (OBE) is a process that involves the restructuring of curriculum, assessment, and reporting practices in education to reflect the achievements of high-order learning and mastery, rather than the accumulation of course credits. In any case, OBE can achieve results on the off chance that it is effectively carried out. Similarly, as with any school change exertion, the key issue is the way to carry it out at the school level.

The reviewed studies of De Guzman et al. (2017), Handelzalts, Pieters, and Voogt (2016), and Damit, Omar, and Puad (2021) focused on the understanding of the Outcome-Based Education of teachers, their experiences, collaboration with the colleagues, and the challenges they face in adopting OBE. Revising the new curriculum using the OBE Curriculum Approach requires further understanding. Because of that, this study wants to know how the selected faculty members of Mindanao State University, Marawi City revise their respective curricula to adapt to the ever-changing demands of the collegiate academy.

2. Method

This study made use of a qualitative approach as it deem appropriate in investigating the faculty members' cognition, experiences, attitudes, and challenges toward adopting OBE as the New Curriculum Approach. Essentially, these insights and narratives were collected from the interviews and observations of the participants coming from four (4) colleges in the University, namely: College of Agriculture, College of Education, College of Sports, Physical Education and Recreation, and King Faisal Center for Islamic, Arabic and Asian Studies of the Mindanao State University-Main Campus, Marawi City.

The participants were selected based on their field of specialization, mostly related to education courses, and have Core Professional Education (CPE) courses in their course prospectus. This study was conducted through face-to-face interviews, which lasted from 15 to a maximum of 25 minutes, and questionnaires for the convenience of the participants. Before the data gathering, the researchers asked permission from the Chairperson of the chosen colleges for the participation of the selected faculty. This was followed by the interview to gather their cognition, experiences, and understanding of using OBE as the new curricular approach. Due to the very hectic schedules of the participants, the Teacher Interview One Question, Teacher Interview Two Questions, and Journal Prompt Questions from Davis (2009) were modified and adapted to suit the aims of this study.

3. Results and Discussion

Table 1: Understanding of the Faculty Members on Outcomes-Based Education

Theme	Subthemes	Participants Responses
Application	Faculty Members' Perceptions of the OBE Curriculum Approach	Number one, as I've said earlier, it's more realistic and concrete in approach. Secondly, logistically speaking, it is more economical, and it requires committed teachers and the support of the school administration. DU92 (F1)
		It is very effective since this type of education allows the students to express their talents and skills or simply to showcase their talents and freely express their views and opinions in class. DU97 (F6)

	Enhances Student's competencies	<p>Outcome-Based Education Technically, we employ the skills or the e-learn skills, especially after learning the technical vocation aspect, right? We ensure that the students would be able to use the skill, to apply the skills technically in the field of that particular specialization let's say for example food and services management so that they can bake a cake after learning the skills. But what will be the effect of learning the skills? Can they market their product? How can OBE become sustainable? DU93 (F2)</p> <p>OBE or Outcome-Based Education is a great help in developing the students' competencies. It will require the students to create, produce, perform, and demonstrate understanding to ensure their learning. The OBE approach is one way to focus the students on their higher-order thinking skills rather than merely remembering and recalling. DU94 (F3)</p> <p>Outcomes-Based Education, under CHED memorandum order thirty, is the result for example of the performance of the students in licensure examination and also the job opportunities and the relevant jobs, so if our students can manage themselves, the teachers now are just facilitators inside the classroom so we need to guide the students but sad to say due to this pandemic we cannot do many activities due to the pandemic like the actual face to face class because we used their internet and many cases are not operating so we need to do more students activities to let them experience the...what they want to learn not more theories and principle without letting them practice what they learn from the subject. DU95 (F4)</p>
	Engagement to community	<p>Okay so, my perspectives about Outcomes-Based Education. I strongly believe that it is more advantageous rather than the old one because if we are going to look at the traditional system of education, we are more on written, we cannot perform, we cannot apply it to the real world, unlike today. If we are going to look back, the child should not learn inside the four corners of the classroom only. the learner should not only be limited to that, we can also engage them in the community in the socialization because that would mold them not just as better students but as better citizens of this country take note, you are educating a soon-to-be president, a soon to be official, a soon to be doctor, a soon to be servants, public servants. So, it is much better, the Outcomes-Based Education is so advantageous for us to see and for us to evaluate how this will affect their daily life. DU99 (F8)</p>

Table 1 above shows that the respondents have a wide understanding of the OBE Curriculum. Most of the participants' responses described it as a form of application of knowledge after the class session. Some of the respondents understood it to be an approach to enhance students' skills to better equip them for the future. Based on the participants' responses, OBE helps the students understand and focus on the career that they are pursuing.

This finding confirms the descriptive study of De Guzman et al. (2017) which examined the understanding of the essence of Outcomes-Based Education (OBE) and knowledge of its implementation in a technological university in the Philippines. They found out that OBE focused on the career that a child is to pursue (3.94), on what the learners must produce (3.93), and teaching is always focused on the outcomes (3.56) with a verbal interpretation of great extent respectively. In short, the study showed that the respondents greatly understand that the essence of OBE gives attention to what profession/occupation the learner has to follow, the learner's output, and outcomes. Moreover, Hejazi (2011) inferred that this approach allows the learners to play an essential role in the learning process and introduces strategic educational planning that is aimed at achieving results. Bouslama et al. (2003) stated that the true measure of education is how learning empowers further achievement. The participants also described OBE as requiring higher order thinking skills that can be applied to perform, create and demonstrate understanding. This was confirmed De Guzman et al. (2017) which showed a great extent of development of higher-order thinking (3.76). There is a great extent of knowledge among the respondents that in OBE, appropriate questioning techniques for the development of learners' higher-order thinking should be utilized. The process of teaching and learning is aimed at promoting students' critical thinking capacity.

Moreover, OBE Curriculum was also perceived by the participants as part of their engagement with the community. According to Spady (1994), the most advanced models of exit outcome design and development deliberately attempt to engage a community's key constituents and stakeholder groups.

Table 2: How do you decide which areas of your curriculum you need to change at any given time?

Theme	Subthemes	Participants Responses
Needs Improvement	Learning Objectives	<p>I realize that my teaching methodology does not fit the learning style in preferences, and it will all boil down to my learning objectives from communicating course outcomes to the intended or enabling learning outcomes so that's what I mean. So, at the end of the day, when I realize that my objectives are not met, it is time to change or revise some areas of my curriculum. DU11 (F1).</p> <p>The assessment result will determine the attainment of the objectives. Once the objective was not attained in that specified time therefore there is a need to improve the curriculum. As to which part</p>

		of the curriculum, we need to evaluate which of the learning objectives were not achieved to identify which part needs improvement or revision. DU13 (F3).
	Needs to update the subject	I tried to update my subject technically by focusing on the things that are indicated in the course description. and then I tried to use different strategies again and again until I succeed to refine and modify them. My first attempts might not be perfect, but they will improve as I continue trying new strategies as a teacher. DU12 (F2)

When asked how the participants decide when some areas need to be changed, most of the respondents answered that when the learning objectives were not attained as shown by the assessment results, then it would be time to change some areas to improve the curriculum. The participants usually have a preference for their teaching methodology.

Table 3: What makes you feel supported when making curriculum revisions?

Theme	Subthemes	Participants Responses
Moral, Intellectual, and Financial Aspects	Availability of aspects during the curriculum revision	It is when the whole school administration shows active and serious support, not just in various aspects like for example in logistics, and financial aspects but in showing emotional or affective support for example when one commits mistakes, something like that. DU56 (F1)
	Support from colleagues and administration boosts the faculty to work on the revision	I will feel supported if my colleagues will provide me necessary resources needed, they will be optimistic about the result, and give me enough time to think, plan and implement it. DU58 (F3) Support from colleagues would be enough for us, we also need some financial support and some other support from our head and the administration. This will make me feel supported. DU61 (F6)

Table 3 above shows the aspects that are most helpful to the faculty members during their curriculum revision. The experiences of the faculty members were determined through the following aspects: these are moral and intellectual support, financial support, and support from colleagues and administration. When the respondents were asked how they felt supported when making curriculum revisions, most of their answers were based on their individual experiences, which implies that they mostly need various aspects of support from the administration during their curriculum revision.

According to them, the support of their colleagues helps them to work more during the curriculum revision because of the experiences of their colleagues. This is supported by the Theory of Experiential Learning of David Kolb (1984) who said that the benefit of experiential learning improves motivation. Hence, support from colleagues, especially in sharing their expertise is also a great contribution to the faculty members.

Table 4: How did you collaborate with colleagues before and during the implementation of the curriculum using OBE Curriculum Approach?

Theme	Subthemes	Participants Responses
Set of Meetings	Series of consultations with the faculty members	Here in the College of Education, as much as possible, we tried to design our own OBE because it is the latest trend, so we provide OBE as an output, or we provide a curriculum that is really inclined or vertically aligned with what we wanted to achieve at the very first, and, I have learned in OBE that it is important to be clear and specific in formulating the objectives so that the students would clearly understand what to expect afterward. So, the collaboration with my colleagues, we hold a series of meetings, from time to time to check or talk about accreditation and other important updates. DU66 (F2)
	Exchanging thoughts and ideas through proper communication	Yes, we need to collaborate, through consultation to build the 4 Cs of teamwork: consultation, camaraderie, cooperation, and collaboration. In our department, although we are not perfect, we collaborate in terms of changes in the curriculum to develop. DU68 (F4) The exchange of thoughts and ideas during the planning is part of collaborating with colleagues before the implementation. during the implementation, sharing resources and communication is a part of the collaboration. DU67 (F3) We make sure that we are in touch through proper communication, which results in sharing credible ideas that are very beneficial to us. DU70 (F6)

Table 4 shows the experiences of the faculty members on how they collaborated with their colleagues before and during the implementation of the OBE curriculum. According to the participants, they collaborated through a series of consultations from time to time, and usually during the meetings, results were communicated properly. According to Kolb's Experiential Learning theory, the best way to learn things is by having experiences and the

opportunity to immediately apply the knowledge. Therefore, the experiences of the faculty members in collaboration with their colleagues result in the development of the new OBE curriculum.

The responses of the participants show that proper collaboration with colleagues determines the success of the implementation of the Outcomes-Based Education Curriculum. This is confirmed by Bansig et al. (2019) which showed that the smooth implementation of the OBE is attributed to the commitment and active collaboration of the administrators from the top level to the program level. Additionally, the successful implementation is a result of careful planning and collaborative efforts among the members of the academic team. Therefore, the great extent of successful implementation of the OBE curriculum before and during the implementation of the faculty members adopting OBE is because of the help of their colleagues, especially their head team.

Handelzalts et al. (2016) confirmed that teams need external support to enhance the curriculum design process and deliver quality products. They identified four forms of support, these are organizational support, process support, expert support, and technical support. However, most of the participants said that proper communication and exchanging of thoughts result in the successful implementation of the curriculum.

Table 5: How does collaborating with colleagues affect your curriculum revision?

Theme	Subthemes	Participants Responses
Positive Effects	Improvement in the teaching style of the faculty members	<p>Yes, it affects me a lot, for I am thinking that two heads are better than one. More heads or more minds can share experiences, and problems they encounter in the day-to-day teaching activities that they can relate to. DU77 (F4)</p> <p>As I have said earlier, it's proper communication that brings good results. Hence, my teaching become more productive because not just I have learned from my experience but also with the help of my colleagues. DU79 (F6)</p> <p>At the College of Sports, Physical Education, and Recreation, we make sure that the output of the students is good, especially in their performance tasks. Collaboration with colleagues helps me improve my teaching styles in line with the curriculum that we are following as a guide. DU80 (F7)</p> <p>If you are talking about the revision, I'll be talking about the positive side. Of course, it has a good effect because you are not alone with the curriculum revision. There are many faculty who are handling other subjects so they know where to recover the performance of the students to level up. They point these out to us when revising the curriculum. I think this should not be taken as negative because it is more like collaborating on ideas, sharing, and brainstorming on their perspectives. DU81 (F8)</p>

Table 5 above displays that the faculty members have a great experience when collaborating with their colleagues and this shows a positive output and builds a positive effect on their attitudes. When the participants were asked about their experiences when collaborating with colleagues during their curriculum revision, most of them said that it has a good effect especially since it helped to improve their teaching styles because of the help from their colleagues. Hence, during their curriculum revision, the faculty members find it easy because their colleagues have contributed a lot to their success. This is supported by the theory of Petty and Cacioppo's Elaboration Likelihood Theory which suggests that people can alter their attitudes in two ways: First, they can be motivated to listen and think about the message, thus leading to an attitude shift. Second, messages that are thought-provoking and that appeal to logic are more likely to lead to permanent changes in attitudes.

Based on the responses during collaborating with colleagues, the respondents' attitudes were positive, which have a good effect on their teaching styles.

Table 6: What are the challenges you encountered when doing curriculum revision using OBE Curriculum Approach?

Themes	Subthemes	Participants Responses
Facilities and Resources	Availability of resources	<p>Of course, there are many challenges, for example, the facilities, and the reading materials like textbooks, and manuals but in the Arabic Teaching Department, we have almost completed all teaching manuals in all the major subjects. DU32 (F4)</p> <p>Our college needs some facilities, especially books and other materials that are aligned with the Outcomes-Based Curriculum Approach. DU34 (F6)</p>
	Time Allotment	<p>I have encountered a lot; we encountered a lot of challenges like the materials needed, the textbooks, and especially time management. Revising a curriculum is a tough job that requires a lot of patience and skills. Support from the administration is also needed. DU33 (F5)</p>

Alignment of Mission and Vision	Faculty Members' Goals and Objectives	It is really hard because OBE requires one to perform activities and expected outcomes. It is challenging to both the teacher as well as the students, particularly if you are catering to diverse students with diverse needs. So, the teacher needs to be flexible in using strategies for this diverse kind of student. DU30 (F2) As far as I experienced revising the curriculum using the OBE approach, it takes time to align the University's vision and mission with the college goals and the program's outcomes. It also takes time in deciding teaching strategies that will fit the outcome-based approach. DU31(F3)
---------------------------------	---------------------------------------	---

Adopting Outcomes-Based Education is a long process, especially since it should be aligned with the course syllabus and the curriculum itself. Based on the responses of the participants, they said that they encountered challenges when doing curriculum revision because of the concrete lack of facilities and available materials like textbooks. Support from the administration is also a challenge during the curriculum revision. In the study of Damit et al. (2021), it was also found that a lack of administrator support hinders OBE implementation in Vocational Colleges.

In addition, the faculty members faced challenges during the curriculum revision using the OBE Curriculum approach because of time allotment. On the whole, according to the participants, the curriculum needs to be aligned with the objectives of the university, its vision, and missions, and most importantly, the university should cater to the varying needs of its diverse constituents.

Table 7: How much time do you spend collaborating with colleagues when making a curriculum revision?

Theme	Subthemes	Participants Responses
Office Hours	Collaboration during consultation hours	Most often, in my consultation hours or sometimes like if I don't have anything to do in my class, I tried to call them, by asking for their ideas and opinions on certain available materials, especially those online and legit that I have already used. DU48 (F2) We know that every faculty member has consultation hours. During this time, we talk about the problems and concerns of our students and the subjects that we handle. But during this sharing, we refrain from mentioning names to respect the identity and privacy of the students. DU50 (F4) It is during office hours that we usually become more active, doing some brainstorming. DU52 (F6)

Table 7 shows the time that the participants usually collaborate with their colleagues. According to the participants, the usual time they collaborated happens during office hours, when they would make some consultations on the improvement they have accomplished and those things that need to be improved. Therefore, the faculty members can consult and exchange ideas only during office hours. This is one of the challenges that the faculty members have encountered, the limited time to spend when collaborating with their colleagues during curriculum revisions.

Table 8: What was the most difficult to grasp during the curriculum revision using OBE Curriculum Approach?

Theme'	Subthemes	Participants Responses
Aligning learning objectives with the OBE Curriculum	Difficulties in designing learning objectives aligned with the curriculum.	For me, it is difficult to align the learning objectives either vertically, or horizontally with learning activities, as well as with assessment tools, like tests. What I mean is that when you do the OBE, which is a very realistic approach, you become practical and creative, and at the same time you need to be guided by principles. DU110 (F1) Most likely, we cannot give the best, but as teachers, we have to be resourceful in looking for strategies that will work for different levels. DU111 (F2) Of course, deciding the content or syllabus of the course is quite delicate, so you need extra care! DU113 (F4) What are the things that need to be done and aligned either horizontally or vertically in revising by using the Outcomes-Based Curriculum? It is only about checking the performance tasks. DU117 (F8)

Table 8 shows the participants' responses on the difficulties that they encountered in doing a curriculum revision using the OBE Curriculum. Therefore, the faculty members were challenged when doing a curriculum revision because they must make sure that their learning objectives were aligned with the curriculum.

When asked about the most difficult challenge the participants encountered, they replied that it was a challenge to align the learning objectives in using the needed skills in performing or implementing tasks in the OBE curriculum. It was also difficult for them to decide on the content of the syllabus of the course.

4. Conclusion

The faculty members described Outcomes-Based Education as holistic in approach as technically and mentally, it enhances students' competencies, develops their skills, and helps the students to be involved in the community.

Moreover, the faculty members experienced difficulties during their revision because in designing the learning objectives, it should be aligned with the OBE curriculum, the availability of necessary aspects that are needed in the revision, and support from colleagues and administration to help the faculty members become more productive. They also replied that collaborating with their colleagues happened during meetings and consultations. On the other hand, they shared that showing a good attitude helped in improving their teaching styles as their colleagues shared their expertise and collaborated on their ideas, which were most helpful to them.

Further, the study shows the challenges that the faculty members have experienced when doing curriculum revision following the OBE because of the following challenges: availability of facilities and resources, time allotment when collaborating with their colleagues, the alignment of the curriculum with the missions and visions of the university in formulating the objectives, and the skills and expertise of the faculty members. Therefore, the challenges that they experienced have greatly contributed to the success of the revision and the implementation of the new Outcomes-Based Education curriculum.

This study is limited to the experiences and understanding of the university faculty members about the OBE curriculum as they went through curriculum revision, therefore, other researchers may conduct a survey to corroborate the findings of this present paper.

Author Contributions: All authors contributed to this research.

Funding: This research was self-funded.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics approval: All participants gave their informed consent for inclusion before they participated in the study.

References

- Bansig, C. and Iringan, M. (2019). Implementation of Outcomes-Based Education in the Graduate School Level at St. Paul University Philippines. *World Journal of Educational Research*, 6(2). <https://tinyurl.com/2p82d3kk>
- Bouslama, F., Azzedine, L., Abdullah, A., and Abonamah, A. (2003). A Novel Outcome-Based Educational Model and its Effect on Student Learning, Curriculum Development, and Assessment. *Journal of Information Technology Education*, 2. <https://doi.org/10.28945/323>
- Camello, N. C. (2014). Factors Affecting the Engineering Students' Performance in the OBE Assessment Examination in Mathematics. *International Journal of Academic Research in Progressive Education and Development*, 3(2), 87- 103 <https://tinyurl.com/2p8abrjh>
- Damit, M., Omar, M., and Puad, M. (2021). Issues and Challenges of Outcome-Based Education (OBE) Implementation among Malaysian Vocational College Teachers. *International Journal of Academic Research in Business and Social Sciences*, 11(3), pp 197-211. <https://tinyurl.com/bd8vu9yb>
- Davis, M. (2003). Outcome-Based Education. *Journal of Veterinary Medical Education*, 30(3), pp 258-63. DOI:10.3138/jvme.30.3.258
- Davis, C. (2009). *Curriculum Improvement: The Teacher Perspective on Change in the Classroom. Teacher Interview One Questions*. Graduate Student Theses, Dissertations, and Professional Papers, 286. <https://scholarworks.umt.edu/etd/286>
- De Guzman, D., Domingo, C., and Umayan, U. (2017). Understanding the Essence of the Outcomes Based Education (OBE) and Knowledge of its Implementation in a Technological University in the Philippines. *Asia Pacific Journal of Multidisciplinary Research*, 5(4), pp 64-71. <https://www.apjmr.com>

- Dela Cruz, A., Ortega, A. (2016). Educators' Attitude towards Outcomes-Based Educational Approach in English Second Language Learning. *American Journal of Educational Research*, 4(8), <http://pubs.sciepub.com/education/4/8/3>
- Gabuyo Y., (2012). Assessment of Learning I. Rex Printing Company Inc., Sta. Mesa Heights Quezon City, Date retrieved: June 6, 2022
- Handelzalts, H., Pieters, M., and Voogt, M. (2016). Teacher collaboration in curriculum design teams: effects, mechanisms, and conditions. *Educational Research and Evaluation*, 22(3–4), pp 121–140, 2016. <https://tinyurl.com/3ndf26v8>