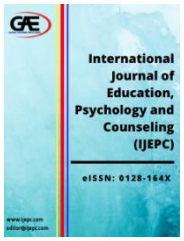
International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762



INTERNATIONAL JOURNAL OF EDUCATION, PSYCHOLOGY AND COUNSELLING (IJEPC)
https://gaexcellence.com/ijepc

FROM CHAOS TO COHESION: ABILITY GROUPING, SOCIAL LOAFING, AND THE RISE OF DATA-DRIVEN GROUP FORMATION IN SECONDARY SCHOOL CLASSROOMS

Chen Choon How[1]*, Norasyikin Mohaiyuddin[2]

[1]School of Education, College of Arts and Sciences, Universiti Utara Malaysia
chen_choon_how@soe.uum.edu.my https://orcid.org/0009-0004-9088-0829
[2]School of Education, College of Arts and Sciences, Universiti Utara Malaysia
asyikinm@uum.edu.my https://orcid.org/0009-0006-0633-5022
*Corresponding Author

Article Info:

Article history:
Received date: 29.04.2026
Revised date: 17.05.2026
Accepted date: 03.06.2026
Published date: 23.06.2026

To cite this document:

Chen, C. H., & Mohaiyuddin, N. (2026). From Chaos to Cohesion: Ability Grouping, Social Loafing, And the Rise of Data-Driven Group Formation in Secondary School Classrooms. *International Journal of Education, Psychology and Counselling, 11*(63), 747-762.

Abstract:

Group work in secondary school classrooms is consistently disrupted by three structural problems: unbalanced group formation, social loafing, and free riding. These problems undermine collaborative learning and burden teachers who rely on manual and unstructured grouping methods. The following research question is explored: What is the current evidence regarding within-class ability grouping, social loafing, and the development of data-driven group formation tools in secondary school and what are the implications for classroom practice? The objective is to systematically synthesise empirical evidence on these three areas and draw clear conclusions for secondary school educators and educational tool developers. A systematic search was conducted in SCOPUS and Google Scholar following PRISMA guidelines. Studies published between 2022 and 2026, written in English, and focused on ability grouping, social loafing, free-riding, academic performance, and student well-being at the secondary school level were included. 24 studies were included and analysed in five themes: ability grouping concepts, academic and psychological impacts, social loafing issues, and data-driven tools to create groups. The results indicate that ability grouping has a positive effect on achievement when it is well structured but has a negative effect when it is poorly structured and taught, leading to psychological harm and social loafing. An emerging trend toward algorithmic group formation tools is found that are superior to manual processes in achieving academic, demographic, and individual accountability. Based on the evidence presented in this review, it is concluded that secondary schools

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762

need to go beyond the manual grouping system and use evidence-based tools, which make the contribution of individual students visible, measurable and consequential to achieve true collaborative learning outcomes. This paper introduces BlendEdu, a novel contribution that is the first web-based, data-driven group formation tool specifically developed for secondary school classrooms, as a research-based intervention to end grouping chaos and create measurable classroom cohesion.

DOI: 10.35631/IJEPC.1163045

Keyword:

Academic Performance, Data-Driven Group Formation, Free-Riding, Secondary School, Social Loafing, Student Well Being, Within-Class Ability Grouping

Introduction

Group work is one of the most important parts of secondary school education today. It is used in classrooms across the world to help students develop the skills they need for the 21st century. However, behind every group work activity, there is a recurring and serious set of structural problems that teachers face every single day. Students rush to work with their friends, leaving others out. Teachers spend hours before class rearranging spreadsheets to make fair groups, only to find that the same problems return. One student does all the work, another contributes nothing, and a third feels judged for being placed in the weakest group. These are not small or occasional difficulties. They are persistent, structural problems that consistently undermine the quality of collaborative learning in secondary schools. The problem is clear: secondary school teachers do not currently have a reliable, structured, and evidence-based method for forming groups that are balanced, fair, and accountable. This review examines that problem directly and looks at what the research evidence tells us about how it can be solved.

Within-class ability grouping is a common practice in secondary schools across the world. This is when students of similar academic ability are grouped together in a small group for classroom activities. This practice is well aligned with the 21st Century Learning (PAK-21 in Malaysia) that focuses on teaching critical thinking, communication, collaboration and creativity skills to students. Student-Centered Learning (SCL) is a key element of PAK-21. It requires students to be actively engaged in learning through discussion, problem-solving and interaction with their peers rather than just listening. Ability grouping is offered as a solution to improve learning outcomes and classroom management (Lwiza, 2025). However, the research on whether this strategy achieves its goals is far from simple or unanimous.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762

First, ability grouping can be inequitable if it is not well-planned. Largent (2025) reported success with ability grouping in mathematics is only achieved when the grouping is planned and teaching is effective. Busso and Frisancho (2023) found in an experimental study in middle schools that the impacts of ability grouping are not always fair, and that low-ability grouping does not always work. Anito and Gaikwad (2025) found students are divided on the effectiveness of ability grouping; some think it is useful to be working with similar ability students while others think it is not fair to be judged on the group. These findings reveal that the problem with ability grouping exists long before students exhibit misbehaviour. The problem lies in the lack of evidence, structure, and planning in grouping.

The second issue is social loafing and free riding. These are the human consequences of the chaos of ability grouping. Two of the most destructive outcomes of poorly organised group work in secondary school. Social loafing occurs when a student's effort during group work is decreased because they expect their peers to do the work. Free riding is more deliberate. A student contributes almost nothing and benefits from the work of their peers without being held accountable for their lack of effort. Ansar et al. (2023) found that the difficulty level of a group task plays a direct role in triggering social loafing, with students becoming more likely to disengage when tasks feel poorly matched to their ability level. Du (2023) showed that the method used to form groups directly affects how much free riding occurs, with students who feel their contribution is invisible within the group being far more likely to disappear from the collaborative process. Gedamu and Shewangezaw (2022) documented that secondary school teachers across different countries consistently identify free riding as one of their most difficult classroom management challenges, even when they actively try multiple strategies to prevent it.

The third issue is negative effects on students' psychology. McGillicuddy (2024) likened ability grouping to an invisible hand that affects students' self-views and their interactions with each other. Students who were placed in lower-ability groups often feel judged, labelled, and demotivated. Forsell et al. (2024) found that secondary school students value the fairness of the assessment of their group work and stop participating if their group work is not assessed fairly. Padilla-Petry et al. (2026) demonstrated that students' motivation to engage in group work is impacted by group emotions. These papers portray group work as being academically as well as emotionally risky if not carried out and managed correctly.

To overcome these ongoing challenges, there is a trend in the literature. There are now numerous articles that discuss the use of data and algorithmic methods to form more fair, transparent and educationally effective groups than traditional methods. Liang et al. (2022a, 2022b, 2023a, 2023b, 2024, 2025) have conducted several studies that demonstrate that using data from student performance, reading data and learning analytics to form groups is more effective than teachers' subjective judgement. Kwak (2025) found that the use of AI-based education tools is more effective in enhancing student learning than the traditional classroom approaches. Xie and Yu (2026) found that using multiple data streams for assessment of students to form groups is more effective and equitable for group work. This review documents this shift from the literature's tolerance of chaotic manual grouping to the development of tools to bring harmony to the classroom.

Despite the growing body of research on each of these three areas, there remains a significant gap in the literature. No review has yet brought ability grouping, social loafing, and data-driven group formation tools together into a single, coherent, and evidence-based picture. This review

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762
directly addresses that gap. The central research question that guides this review is: What does the current evidence reveal about the effects of within-class ability grouping and social loafing in secondary school classrooms, and how does the rise of data-driven group formation tools offer a structural solution to these persistent problems? By examining all three pillars together, this paper aims to provide secondary school educators, researchers, and educational technology developers with a clear and honest account of what the evidence currently shows and where it points next. This review also provides the research foundation for BlendEdu. An intelligent, web-based group formation tool designed to translate the evidence reviewed here into a practical and accessible classroom solution.

Methodology

This review is guided by the following research question: What does the current evidence reveal about the effects of within-class ability grouping and social loafing in secondary school classrooms, and how does the rise of data-driven group formation tools offer a structural solution to these persistent problems? To address this question, the objective of this review is to systematically identify, screen, synthesise, and critically examine empirical evidence on within-class ability grouping, social loafing, free-riding, and algorithmic group formation tools in secondary school settings, in order to draw clear, evidence-based conclusions and implications for classroom practice and educational tool development.

The methodology follows the PRISMA guidelines, which provide a transparent and structured framework for reporting systematic reviews. The PICo technique was used to guide the formulation of the research questions by identifying the Problem or Population, Interest, and Context. The population his review is concerned with secondary school students and teachers. The interest includes within-class ability grouping, social loafing and free-riding, academic performance, student well-being, and big data tools for forming groups. The context is in secondary school and in the current 21st Century Learning, and the increasing use of digital tools in education.

The systematic searching process comprises three steps: identification, screening and eligibility (Mohamed Shaffril et al., 2020). In the identification phase, the databases SCOPUS and Google Scholar were searched. The search terms used were within-class ability grouping, mixed-ability grouping, group formation, social loafing, free-riding, academic achievement, student well-being, data-driven grouping, algorithmic group formation, and secondary school. These keywords were searched separately and in conjunction with other keywords using Boolean operators to capture all the relevant studies on the three main themes of the review.

During the screening phase, the title and abstract of the articles were read to check if the articles were relevant to the review's three main themes. We removed articles that were clearly not related to within-class ability grouping, social loafing or data-driven group formation. During the eligibility stage, the full text of the articles was reviewed. Articles had to be published between 2022 and 2026, in English, and on within-class ability grouping, academic performance, group work, social loafing, free-riding, well-being, algorithmic group formation or data-driven group formation at the secondary school level or in settings that could be applied to secondary school. Exclusion criteria included articles that were not about secondary school (only about primary or university), not in English, or published outside the time frame. The PRISMA flow diagram is used to display the study selection process in Figure 1.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762

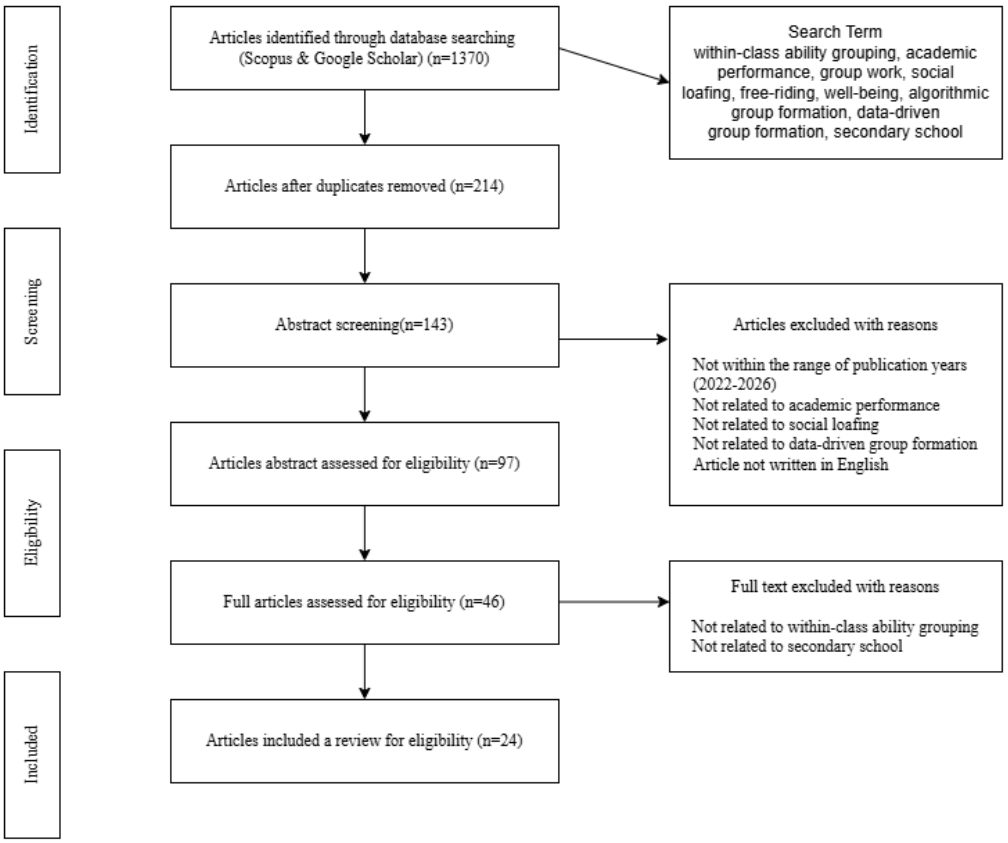


Figure 1: Study Selection Process

This review has included 24 studies that fulfilled the inclusion criteria. Table 1 summarises the 24 studies included in the review, including their country, summary of their objective and theme. They were published in the years 2022-2026, and originated from Malaysia, Japan, England, USA, Mexico, Sweden, Ethiopia, Indonesia, China, Spain, Turkey, Germany, Philippines, Poland and Ireland. The studies were both qualitative and quantitative. The results of the 24 studies are explored and analysed under five themes in the next section.

Table 1: List of Included Studies

Authors / Year / Country	Objective Summary	Key Theme
Anito & Gaikwad (2025) Philippines	To examine students' perception of ability grouping in a private international school	Ability grouping & student perception
Ansar et al. (2023) Malaysia	To explore how task difficulty level influences academic social loafing in group work	Social loafing & task design
Busso & Frisancho (2023) Mexico	To investigate ability grouping and student performance through experimental evidence from middle schools	Academic performance & grouping

Du (2023) China	To examine how grouping methods influence free-riding behaviour in group work	Free-riding & group formation
Forsell et al. (2024) Sweden	To investigate upper secondary students' views on fairness in group work assessment	Group assessment & fairness
Gajderowicz et al. (2023) Poland	To develop a multidimensional measure of students' preferences towards group work	Group work preferences
Gedamu & Shewangezaw (2022) Ethiopia	To study how secondary school teachers manage and assess free-riders in group work	Free-riding management
John et al. (2023) Malaysia	To examine group contingency strategies in the ESL classroom on student engagement	Group contingency & ESL
Kwak (2025) USA	To compare AI-driven tools with traditional teaching methods on student learning outcomes	Digital tools & learning outcomes
Largent (2025) USA	To systematically review the impact of ability grouping on quality mathematics education	Ability grouping & mathematics
Liang et al. (2022a) Japan	To explore predictive indicators from reading-based online group work for group formation assistance	Data-driven group formation
Liang et al. (2023a) Japan	To analyse predictable attributes of data-driven group work for teacher assistance	Data-driven group work
Liang et al. (2024) Japan	To develop a data-driven support infrastructure for iterative team-based learning	Team-based learning support
Liang et al. (2022b) Japan	To implement algorithmic group formation and evaluation in a learning analytics-enhanced environment	Algorithmic group formation
Liang et al. (2023b) Japan	To examine group formation based on reading annotation data and classroom practice	Reading data & group formation
Liang et al. (2025) Japan	To optimise group formation using a mixed genetic algorithm based on marker data	Algorithm & group optimisation
Lwiza (2025) Africa	To examine how ability grouping and remedial classes enhance academic efficiency in Asia	Ability grouping & efficiency
McGillicuddy (2024) Ireland	To investigate how ability grouping shapes relational dynamics and student well-being	Grouping & well-being
Özenç & Başaran (2025) Turkey	To examine group behaviours in schools through a social psychology framework	Group behaviour & social psychology

Padilla-Petry et al. (2026) Spain	To examine how emotionally supportive environments affect students' emotional well-being	Emotional well-being & learning
Wilkinson & Penney (2024) England	To study students' preferences for setting and mixed-ability grouping in secondary school PE	Student grouping preference
Xie & Yu (2026) China	To develop an innovation-driven group composition model using multi-evidence assessments	Group composition & CSCL
Yasin et al. (2025) Indonesia	To introduce the Student Contribution Index to reduce social loafing and free-riding	SCI & contribution tracking
Ziernwald et al. (2022) Germany	To systematically review how differentiated instruction promotes high-achieving students in mixed-ability classes	Differentiated instruction

Literature Review

We have divided the findings of the 24 studies into five themes. These themes align with the paper's main narrative of transforming chaos into cohesion. From the conceptual basis of ability grouping to the impact of inappropriate grouping on academic and psychological well-being, to the peak of social loafing and free-riding problems, and the rapidly emerging evidence of the effectiveness of data-driven approaches in promoting classroom cohesion.

Understanding Ability Grouping and Its Challenges in Secondary Schools

A majority of the chaos of group work in secondary schools happens long before the students start to misbehave. It can start when the teacher is deciding on the student groupings. Ability grouping is the most common method of organising secondary school classrooms globally but is more complex than it may seem. Pembelajaran Abad Ke-21 (PAK-21) or 21st Century Learning is the learning approach being promoted in Malaysia's secondary school classrooms. It emphasises group work and collaboration, requiring students to actively think, communicate and collaborate to solve problems. Student-Centered Learning (SCL), a key element of PAK-21, sees the role of the teacher as more that of a facilitator than a knowledge source; and group activities as the main way for students to learn and practise skills. Within-class ability grouping students of the same academic ability into smaller groups within the same classroom. This is commonly employed as a strategy to target these activities and make it easier for the teacher (Lwiza, 2025). But evidence shows this approach is fraught with problems if not done carefully, systematically and with data.

Largent (2025) reported that ability grouping is favoured in secondary school over class-streaming because it enables teachers to manage ability differences in the classroom without the social and institutional stigma that is attached to class-streaming. But the message is not clear about its success in achieving the benefits. In our study in a private international school, we observed students' responses to ability grouping were mixed. Some perceived this to be a relief that they were grouped with their peers of the same ability as they were not required to compete with more able peers. However, some people feel that their grouping decisions send a message and often a discouraging one. This means that teachers lack confidence in their

students' academic success. This is important as it shows that the academic neutrality of the grouping decision is not neutral. It communicates something to all the students in the classroom and it's not always a positive or motivating message.

McGillicuddy (2024) referred to this as an invisible hand, not only affecting what students learn, but also how they feel and how they relate to each other in the classroom. During secondary schools, students are experiencing a variety of academic, social and personal stressors. This invisible hand can be a recipe for disaster for students if not addressed. Wilkinson and Penney (2024) also observed this as students in English secondary schools experienced different emotions towards different grouping approaches in physical education. Some preferred same-ability groups due to the safety and lack of judgement. But others preferred mixed-ability groups because they believed they learnt something from the interactions with others. These preferences demonstrate ability grouping isn't a universal approach. The context, subject, class dynamics, and the emotional needs of students all influence the effectiveness of grouping to support active, confident and collaborative learning. When these aspects are not considered and students are grouped based on factors such as convenience or tradition, then group dynamics are not cohesive. This is a more subtle and nuanced version of classroom chaos that they are trying to avoid.

Impact on Academic Performance

The big promise of within-class ability grouping is that it will lift student academic performance by enabling teachers to set tasks and teaching that are appropriate to the ability of students in the group. The evidence indicates this promise can be realised with certain conditions. When ability grouping is carefully planned, accompanied by high-quality teaching, and is monitored. It can result in significant performance improvements. Without these factors, it has inequitable and even negative academic effects. It exacerbates the differences between high and low ability students rather than ameliorating them. The reason this is important is because it helps us understand why teachers persist in using ability grouping even though they know it is problematic. The chaos of mixed results is not a foregone conclusion but can be avoided with evidence-based strategy.

Busso and Frisancho (2023) have one of the most transparent experimental evaluations of ability grouping in middle schools in Mexico. They found that students who were grouped with other students with higher ability improved their academic performance. But there was no corresponding improvement in those in lower-ability groups. This imbalance is an example of academic chaos. A practice that is designed to benefit all students has a negative impact on those who are already behind and a positive impact on those who are already ahead. Ziernwald et al. (2022) also found this to be the case, after reviewing differentiated instruction in mixed-ability classrooms. They concluded that grouping can be a good way to promote academic achievement, provided that teachers ensure all groups receive challenging tasks, instructional support, and supervision. Teacher involvement is not a "nice to have". It is the one factor that makes the difference between ability grouping improving academic achievement or not.

Largent (2025) examined data from multiple nations and verified the positive effects of ability grouping in mathematics at secondary school. but only with well-designed and managed curriculum programs. Merely grouping students does not have an impact. It is the combination of appropriate grouping, teaching and assessment that makes a difference. Grouping students according to academic data can lead to more consistent academic effort and quality of work

during group tasks (Liang et al., 2023a). The application of evidence to determine group allocations results in more reliable and fairer benefits of grouping for all students in the classroom, regardless of their ability. Data and technology to support team learning allow teachers to monitor the progress of groups as they are learning and intervene in academic problems in a timely manner (Liang et al., 2024). In the most direct evidence of technology's impact on academic performance, Kwak (2025) showed that students who are engaged in learning with the support of AI-based learning technologies outperform those who are engaged in more traditional classroom learning. These studies collectively suggest that the academic noise and inconsistent results of ability grouping can be removed with the help of data and technology that support teachers. Rather than relying on teachers to put their own manual and judgement-based methods in place to ensure group success.

Psychological Impact and Well-Being

Perhaps the most overlooked implication of poor group design in secondary schools is the psychological harm that it has on children. Much of the research on ability grouping focuses on its academic impact. However, psychological impact is also critical and often more long-lasting. Students who are labelled, ostracised or mistreated because of their group placement are unlikely to learn much no matter how good the tasks or the teacher. The shambles of bad grouping are thus not only academic. They are also highly emotional and must be taken seriously and urgently in the same way as academic performance.

McGillicuddy (2024) used a powerful and accurate image to describe the psychological consequences of ability grouping in secondary schools. An invisible hand that creates a set of expectations for students' self-concept, academic identity, and peer relationships that are often invisible to teachers. Students who are assigned to the lower-ability classes often come to think that they are less able than their peers. This belief can become a self-fulfilling prophecy that decreases a student's level of effort, participation in class discussions, and confidence in their ability to learn and grow in other challenging learning situations in their secondary school years. In a learning environment where the PAK-21 and SCL initiatives expect all students to be confident, active and collaborative learners. This form of psychological harm is not only counter-productive to achieving the goals of the education system. It is a direct attack on them. Padilla-Petry et al. (2026) demonstrated that the emotional climate of the group has an impact on the way students behave and take part in group activities. They discovered that students in a group environment that was emotionally supportive were more positive, more willing to engage and more engaged than their peers in groups without emotional safety. Emotional safety, inclusion and respect in the classroom is not a nice-to-have for teachers. It's the necessary foundation for all students to be able to learn together effectively.

Özenç and Başaran (2025) studied group dynamics in high schools from a social psychology perspective and found the structure of a group has a tangible impact on students' group behaviours. Structured groups that had clear roles, expectations, and a positive social milieu. It made students feel safe, motivated and connected. A lack of structure in groups led to students feeling excluded, hostile or hidden in the group. One of the most effective causes of psychological withdrawal from group work is perceived students' unfair assessment of group work (Forsell et al., 2024). When upper secondary school students perceived the assessment was not reflective of their individual effort in the group. They lost motivation and stopped working in group activities. This is a significant finding because it demonstrates that the negative psychological consequences of bad group management extend past the initial group

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762
formation decision to the semestral management of this form of work. Wilkinson and Penney (2024) added more detail by demonstrating students' emotional reactions to different groupings is highly individualised, with some students finding same-ability groupings more psychologically safe. While others find mixed-ability groupings more emotionally supportive. But what is clear across all the findings of this theme is that failing to consider the psychological reality of group formation results in a steady state of classroom chaos. The one that is not written into lesson plans and timetables but is experienced by every student every day they are at school.

Social Loafing, Free-Riding and the Inefficiency of Manual Group Formation

While the first three themes describe the conditions that produce classroom chaos. This theme describes the peak of chaos which are social loafing and free-riding. Social loafing and free-riding are the most consistently reported behaviours that are difficult to avoid and difficult to manage in secondary school teachers' group work activities. This is also the most obvious evidence that manual grouping without structure has inherent limits that cannot be circumvented through teachers' efforts. Social loafing is a behaviour where a student decreases their own performance on a group task on the basis that they think the task will be completed even if they don't put in the effort. Free-riding is more malicious and more extreme. Students contribute little to nothing and reap the rewards of the other group members' work without having to account for their lack of contribution. Both behaviours negate the purpose of group work by eliminating the collaborative nature of group activities, leading to resentment among students who are contributing to the group, and undermine the academic and social benefits of group work in a secondary school environment.

Ansar et al. (2023) showed that the level of difficulty of the group task is a key variable in determining the amount of social loafing during group work tasks. If a task is too simple for the group's ability, students don't perceive the need to work hard and the group effort decreases. If the task is too difficult, some members become demoralised and leave the task to the more able group members. This is important for within-class ability grouping because it reveals that while it's important for the group composition to be right. It's equally important for the task itself to be at the right level of difficulty for the group. So that all the students have the ability and the motivation to contribute. Du (2023) focused on free-riding and discovered that students who believe that their individual efforts are not visible, or are otherwise not important to the group, are much more likely to become free-riders. If students do not feel their contribution will make a difference to the group's success, and they believe the group will be successful despite their effort. Then they are likely to put in the minimum effort. This is not a moral failing, but it's a normal reaction to a group set-up that doesn't track, make visible, and reward individual effort.

Gedamu and Shewangezaw (2022) did a study with secondary school teachers on how they attempt to deal with free-riding when students are working in groups. The results are telling and revealing. They adopted a lot of strategies including allocating specific roles, keeping a vigilant eye on their behaviour, enforcing peer evaluation activities and changing group members. Despite all of this "doing", free-riding continued to be a vexed issue in their classrooms. This is, as the study suggested, because these strategies are "after the fact". They respond to the occurrence of free-riding after it has emerged and interfered with group work. Rather than providing strategies to ensure that it is very difficult to engage in free-riding in the first place. Gajderowicz et al. (2023) showed that students with a positive attitude to group

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762
work are less likely to socially loaf, and that means that a positive group culture is as important as group composition. Yasin et al. (2025) presented the Student Contribution Index (SCI) as a way of measuring individual effort in group projects. It found that when students know that their contribution is being measured and made public to the teacher and other group members, social loafing and free-riding is reduced in a noticeable way. John et al. (2023) also found that group contingency approaches. Where the group's success is contingent upon everyone's success and has an impact on disengagement because students have an interest in making sure everyone in the group is pulling their weight. These results put to rest one thing for sure: social loafing and free-riding is not an individual character trait or personal laziness. They are problems of structure that are caused by weak structure in group formation and group accountability. When the structure allows individuals to contribute that is visible, measurable and has consequences, students work. Without the structure there is no cohesion and no collaboration learning.

The Rise of Data-Driven Group Formation

The lesson of Themes 1-4 is that we have a problem with systemic classroom chaos that is created and perpetuated by manual and unstructured grouping in secondary school classrooms. But the more important story in the recent research literature is not the issue. It is the solution. A distinct trend has emerged in recent years in educational research that has seen an informed and targeted movement in group formation from manual and unstructured methods to data-driven, algorithmic and technology-supported group formation. Specifically in response to the problems with these methods. This trend is the rise reported in this review. It is not about adopting digital technology to make the process more efficient. It is about using evidence, data and smart systems to achieve the equitable, accountable and effective group formation that manual methods have been shown not to do well in secondary classrooms.

We have the most detailed picture of this trend from the series of papers published by Liang and colleagues from 2022 to 2025. Liang et al. (2022a) were the first to demonstrate data collected from students' online reading behaviour such as how they interact with and mark-up the learning content. It can be a good predictor of the likelihood of more successful group formation. They showed that the engagement patterns of students had information about which groups are likely to be successful. Information that is not available to the teacher when they are forming groups. Liang et al. (2022b) then conducted a full-scale implementation of algorithmic group formation in a learning analytics environment at a Japanese junior high school that found that using an algorithm to form groups was more consistent and fairer than traditional teacher-led group formation. Liang et al. (2023a) built on this work to demonstrate that data-driven group formation not only resulted in more productive groups, but more reliable and consistent outcomes across different classroom settings. By using evidence rather than intuition to group students, we can get better results because the group formation process is explicit, consistent and evidence driven.

Liang et al. (2023b) then demonstrated that algorithmic predictions of group formation using reading annotations could be applied to the classroom. It shows the positive effects of algorithmic group formation are not limited to the lab. But also make a difference in the secondary school classroom. Liang et al. (2024) then developed a full data-driven support system for group-based learning to provide teachers with an early warning system so they can monitor when a group is faltering. This represented a shift from traditional group formation, once and then letting the students "self-organise", to group support throughout the learning

cycle. Liang et al. (2025) then went on to apply this method by introducing a mixed genetic algorithm to optimize groups to incorporate multiple variables such as academic achievement, reading ability, collaboration patterns and collaboration history. These groups were more effective than groups that were formed using only a single variable. This is important because cohesion is a combination of variables and that is what algorithms excel at doing and doing better than human intuition under time constraints in the classroom.

Xie and Yu (2026), independently using a different method, also showed that a combination of teacher, student and peer feedback when forming groups is a more effective and equitable way of forming groups than doing so based on individual evaluation only. The fact that these independently conducted and differently designed studies agree is remarkable in two ways: first, the data-driven formation of groups is better than the hand-crafted formation of groups; second, the more variables considered in the process of group formation, the better and fairer the groups. Kwak (2025) has provided and captured the final piece of this evidence by showing that AI-based smart tools for education are significantly better for student learning than current standard classroom practices. This is a critical and important waypoint that the need for the use of smart tools in secondary school education is now, not tomorrow. This evidence suggests that there is a need for a real system that can provide these capabilities in a tool that classroom teachers can use in their schoolwork flows. BlendEdu is the tool to do just that. Its Intelligent Grouping Engine is targeted to solve the academic imbalance problem found by Busso and Frisancho (2023) and Largent (2025). Its Clash Manager and Growth Track system overcomes the problem of free-riding identified by Du (2023), Ansar et al. (2023), Gedamu and Shewangezaw (2022) and Yasin et al. (2025). Its Teacher-Assigned Specialisation Sorting, the role rigidity problem and psychological labelling problem found by McGillicuddy (2024) and Forsell et al. (2024). And its Instant Generation Dashboard to address the admin problem found in all the studies reviewed here. BlendEdu makes group formation an evidence-based teaching practice. Turning the mess reviewed in this paper, theme by theme, into the unity of secondary school collaborative learning that has eluded us for so long.

Conclusion

The aim of this review has been to draw a straight line from chaos to cohesion in secondary school teachers' group formation and management practices. The findings from the 24 studies reviewed in five interrelated themes demonstrate that the chaos is real, widespread and reported in various countries, subjects and school systems. Unstructured, unaccountable and undocumented within-class ability grouping leads to three problems which are interlinked: inequitable learning outcomes, psychological damage to students in lower-ability groups, and endemic social loafing and free-riding that undermines the very collaboration that is supposed to be the purpose of group work. These are not one-off results from an odd few classrooms. They are patterns that demonstrate the problem of manual and unstructured group creation is a worldwide and systemic problem that requires a systemic solution.

Research evidence is clear but complex. Busso and Frisancho (2023) demonstrated ability grouping work for students in high groups, but not for those in low groups. Largent (2025) showed that grouping only works to improve outcomes if it is coupled with effective teaching. Ziernwald et al. (2022) confirmed that differentiation within groups can be effective, but only if teachers ensure that all groups get good tasks and good support. The psychological evidence is also key. McGillicuddy (2024), Padilla-Petry et al. (2026), Forsell et al. (2024) and Özenç and Başaran (2025) all indicate the emotional impact of grouping is critical to student

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762

engagement and confidence, and their willingness to participate. One who feels stigmatised, ostracised or assessed unfairly will not participate in group work, however well designed. The social loafing evidence, such as that of Ansar et al. (2023), Du (2023), Gedamu and Shewangezaw (2022), Gajderowicz et al. (2023), Yasin et al. (2025) and John et al. (2023) shows that free-riding and disengagement are structural responses to structural weakness in group formation and accountability. When it is not visible and important, they don't show up. When it's visible, measured and consequential, they engage.

The most exciting development in this review is the strong and emerging trend towards data-driven group formation as a solution to these structural problems. The research of Liang et al. (2022a, 2022b, 2023a, 2023b, 2024, 2025), Xie and Yu (2026) and Kwak (2025) shows that algorithmic and intelligent group formation systems create more balanced, more equitable and more academically successful groups than any manual method currently at the disposal of secondary school teachers. That's the cohesion story with robust, consistent and varied evidence from multiple studies across different countries and contexts. Secondary schools that are implementing PAK-21 and SCL cannot continue using manual and intuitive methods of group formation where collaborative learning is to support academic achievement. We know the research and have the tools. We now need a platform that makes these tools accessible to classroom teachers in a way that does not overwhelm or complicate the already complex and challenging task of teaching.

BlendEdu is a clear, coherent and research-based solution to this challenge. Each of BlendEdu's features addresses a specific problem that has been identified in this review in one of the five themes. The Intelligent Grouping Engine corrects academic imbalance. The Clash Manager and Growth Track resolve social loafing and free-riding. The Teacher-Assigned Specialisation Sorting prevents role rigidity and the negative psychological effects of uncontrolled group labelling. The Instant Generation Dashboard removes the waste of time that currently robs teachers and students of teaching and learning time. BlendEdu is not a time saver. It is an evidence-based intervention tool designed to address the problem of turning the chaos that is the current state of grouping practices into the cohesion that is needed and desired in collaborative learning for secondary school classrooms. Future studies should investigate the effects of BlendEdu and other algorithmic platforms on the academic achievement, well-being and teacher satisfaction of Malaysian secondary school students. Longitudinal research examining the effects of data-driven group formation over the course of academic years would offer the best and most relevant evidence to guide the use of these technologies at the school and national education policymaking level.

Acknowledgements: The authors would like to express their sincere gratitude to Universiti Utara Malaysia, Sintok, Kedah for providing the necessary resources and support throughout the course of this research.

Funding Statement: No Funding

Conflict of Interest Statement: The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the International Journal of Education, Psychology and Counselling (IJEPC)

Ethics Statement: This study did not involve any human participants, animals, or sensitive data requiring ethical approval. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.

Author Contribution Statement: All authors contributed significantly to the development of this manuscript. Chen Choon How was responsible for the conceptualization, methodology, handled data collection, analysis, interpretation of results, contributed to the literature review, drafting, and critical revision of the manuscript. Norasyikin Mohaiyuddin was responsible for overall supervision of the study. All authors read and approved the final version of the manuscript prior to submission.

International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 11 Issue 63 (June 2026) PP. 747-762

References

Anito, H. D., & Gaikwad, P. (2025). Students' Perception of Ability Grouping in a Private International School. *European Journal of Education and Pedagogy*, *6*(1), 52–60. https://doi.org/10.24018/ejedu.2025.6.1.900

Ansar, M., Alwi, M. A., Fakhri, N., & Daud, M. (2023). The Influence of Task Difficulty Level on Academic Social Loafing. *Proceedings of the Unima International Conference on Social Sciences and Humanities (UNICSSH 2022)*, 1173–1182. https://doi.org/10.2991/978-2-494069-35-0_141

Busso, M., & Frisancho, V. (2023). *Ability Grouping and Student Performance: Experimental Evidence from Middle Schools in Mexico*. http://dx.doi.org/10.18235/0004716

Du, G. (2023). The Influence of Grouping Methods on the Free-Riding Behavior in Group Work. *Advances in Economics, Business and Management Research*, 545–550. https://doi.org/10.2991/978-94-6463-124-1_64

Forsell, J., Forslund Frykedal, K., Andersson, P., & Hammar Chiriac, E. (2024). Upper secondary school students' perspectives on un/fairness in group work assessment. *Research Papers in Education*, *40*(2), 259–280. https://doi.org/10.1080/02671522.2024.2378429

Gajderowicz, T., Jakubowski, M., Wrona, S., & Alkhadim, G. (2023). Is students' teamwork a dreamwork? A new DCE-based multidimensional approach to preferences towards group work. *Humanities and Social Sciences Communications*, *10*(1). https://doi.org/10.1057/s41599-023-01641-x

Gedamu, A. D., & Shewangezaw, G. L. (2022). Secondary school teachers' management and assessment strategies of free-riders in group work: implication for engaging the disengaged. *Heliyon*, *8*(6), e09742. https://doi.org/10.1016/j.heliyon.2022.e09742

John, J. G., Gopal, R., Singh, C. K. S., Yesupatham, K. M., & Pratama, H. (2023). Reaching Out to Group Contingencies in the ESL Classroom. *Journal of Higher Education Theory and Practice*, *23*(1). https://doi.org/10.33423/jhetp.v23i1.5794

Kwak, M. (2025). The Effectiveness of AI-Driven Tools in Improving Student Learning Outcomes Compared to Traditional Methods. *Issues in Information Systems*, *Volume 26*(Issue 4). https://doi.org/10.48009/4_iis_2025_120

Largent, T. (2025). A systematic review of the impact of ability grouping on achieving SDG4 in mathematics education. *Quality Education for All*, *2*(1), 441–461. https://doi.org/10.1108/qea-12-2024-0154

Liang, C., Horikoshi, I., Majumdar, R., Flanagan, B., & Ogata, H. (2022). *Exploring Predictive Indicators of Reading-Based Online Group Work for Group Formation Teaching Assistance*. https://library.apsce.net/index.php/ICCE/article/view/4549

Liang, C., Horikoshi, I., Majumdar, R., Flanagan, B., & Ogata, H. (2023). Towards Predictable Process and Consequence Attributes of Data-Driven Group Work. *Technology & Society*, *26*(4). https://doi.org/10.30191/ETS.202310_26(4).0006

Liang, C., Majumdar, R., Horikoshi, I., & Ogata, H. (2024). Data-Driven Support Infrastructure for Iterative Team-Based Learning. *IEEE Access*, *12*, 65967–65980. https://doi.org/10.1109/access.2024.3393421

Liang, C., Majumdar, R., Nakamizo, Y., Flanagan, B., & Ogata, H. (2022). Algorithmic group formation and group work evaluation in a learning analytics-enhanced environment: implementation study in a Japanese junior high school. *Interactive Learning Environments*, *32*(4), 1476–1499. https://doi.org/10.1080/10494820.2022.2121730

Liang, C., Toyokawa, Y., Majumdar, R., Horikoshi, I., & Ogata, H. (2023). Group formation based on reading annotation data: system innovation and classroom practice. *Journal*

of Computers in Education, *11*(3), 667–695. https://doi.org/10.1007/s40692-023-00274-y

Liang, C., Toyokawa, Y., & Ogata, H. (2025). Optimizing group formation with a mixed genetic algorithm: an empirical study in active reading using marker data. *International Journal of Computer-Supported Collaborative Learning*, *20*(4), 519–548. https://doi.org/10.1007/s11412-025-09452-9

Lwiza, S. (2025). Enhancing Academic Efficiency through Ability Grouping and Remedial Classes: The Cases of India and Vietnam. *Journal of Humanities and Social Sciences*, *14*(3). https://doi.org/10.65085/2467-4745.1146

McGillicuddy, D. (2024). Ability grouping: The invisible hand shaping relational dynamics and wellbeing in education? *Assessment and Development Matters*, *16*(2), 7–13. https://doi.org/10.53841/bpsadm.2024.16.2.7

Mohamed Shaffril, H. A., Samsuddin, S. F., & Abu Samah, A. (2020). The ABC of systematic literature review: the basic methodological guidance for beginners. *Quality & Quantity*, *55*(4), 1319–1346. https://doi.org/10.1007/s11135-020-01059-6

Özenç, Y., & Başaran, Y. (2025). Group Behaviors in Schools in the Context of Social Psychology. *Jass Studies-the Journal of Academic Social Science Studies*, *18*(104), 95–120. https://doi.org/10.29228/JASSS.78909

Padilla-Petry, P., Fantova-Romero, A., Rodríguez-Rodríguez, J., & Argemí-Baldich, R. (2026). Improving students' emotional well-being in an extracurricular activity: contrasting students' and professionals' views on an emotionally supportive learning environment. *Social Sciences & Humanities Open*, *13*, 102752. https://doi.org/10.1016/j.ssaho.2026.102752

Wilkinson, S. D., & Penney, D. (2024). Students' preferences for setting and/or mixed-ability grouping in secondary school physical education in England. *British Educational Research Journal*, *50*(4), 1804–1830. https://doi.org/10.1002/berj.4000

Xie, T., & Yu, J. (2026). Innovation-driven group composition for effective collaborative programming: integrating multi-evidences of teacher, student, and peer assessments. *International Journal of Computer-Supported Collaborative Learning*. https://doi.org/10.1007/s11412-026-09469-8

Yasin, B., Burhan, O. K., Mustafa, F., Fata, I. A., & Komariah, E. (2025). STUDENT CONTRIBUTION INDEX (SCI) IN SCIENCE: A MEASURE OF CONTRIBUTION TO MITIGATING SOCIAL LOAFING AND FREE-RIDING IN TEAM PROJECTS. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, *9*(3), 1066–1078. https://doi.org/10.22437/jiituj.v9i3.42064

Ziernwald, L., Hillmayr, D., & Holzberger, D. (2022). Promoting High-Achieving Students Through Differentiated Instruction in Mixed-Ability Classrooms—A Systematic Review. *Journal of Advanced Academics*, *33*(4), 540–573. https://doi.org/10.1177/1932202x221112931