No 2021-1-FR01-KA220-VET-000028020

UPTOOL

Analysis of preferences

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Using Profiles to Optimize Online Learning – UPTOOL

Data was collected from participants of learning activities organized in project UPTOOL where project partners intended to find out which learning strategies work best and what motivates learning participants.

Learning was organized in three modules: 1) media literacy (N 681), 2) digital literacy (N 671) and 3) math literacy (N 780) (see table 1).

Table 1

Frequencies

Frequencies of Mode of learning

Mode of learning	Counts	% of Total	Cumulative %
digital	671	31.5%	31.5%
math	780	36.6%	68.1%
media	681	31.9%	100.0%

In this material are analysed data from participants (N 1570) who completeed the full cycle of learning. It means that they not only filled the starting questionnaire but also followed the learning path in the platform, did tasks prepared and answered the final questionnaires.

All together 916 participants from France, 281 participant from Germany and 373 participants from different other European countries finalized learning modules.

Data analyses:

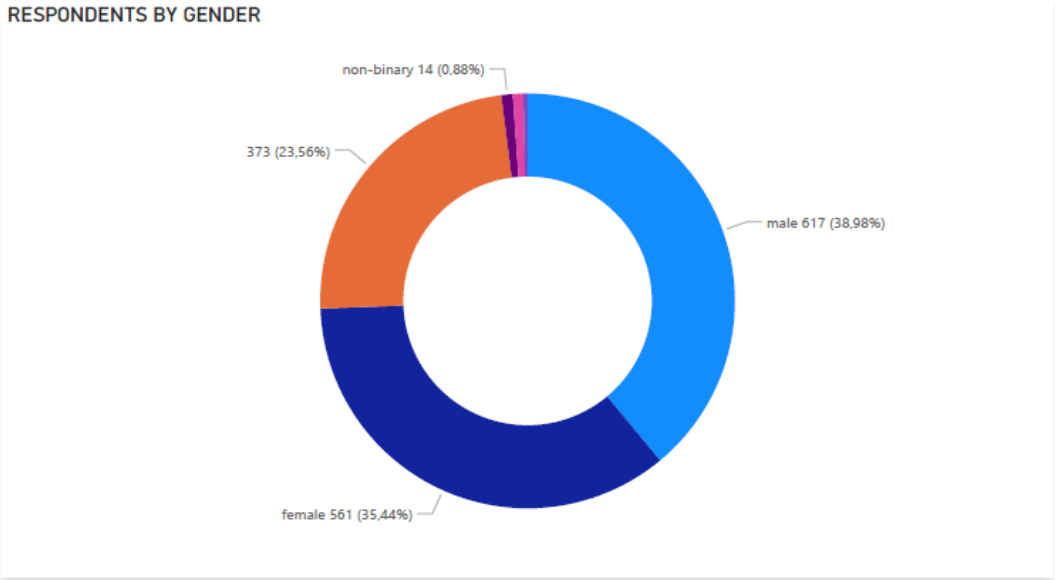

Chart 1

This donut chart 1 illustrates the distribution of respondents by gender. The chart divides respondents into three categories: male, female, and non-binary, with the following breakdown:

Male: 617 respondents, accounting for 38.98% of the total.

Female: 561 respondents, representing 35.44%.

Non-binary: 14 respondents, which is 0.88% of the total.

Other: 373 respondents, which represents 23.56%.

The largest segment is for male respondents, followed closely by females. The non-binary category is the smallest, making up less than 1% of the respondents. The other category is substantial at 23.56%, showing that a significant portion of respondents did not identify as either male or female.

Table 21

Proportion Test (2 Outcomes)

	Level	Count	Proportion	p
Gender	**female**	794	0.450	<.001
	male	922	0.523	0.060
	non-binary	22	0.012	<.001
	prefer not to say	19	0.011	<.001

	Level	Count	Proportion	p
	other	7	0.004	<.001
Age	**16 - 18**	765	0.434	<.001
	15 or under	50	0.028	<.001
	41 and more	24	0.014	<.001
	19 - 23	787	0.446	<.001
	24 - 30	119	0.067	<.001
	31 - 40	19	0.011	<.001

This table 2 represents the results of a binomial test that compares proportions within different gender and age groups against the null hypothesis (*H*0) that the proportion equals 0.5. The columns in the table provide the following information for each group.

Key Findings:

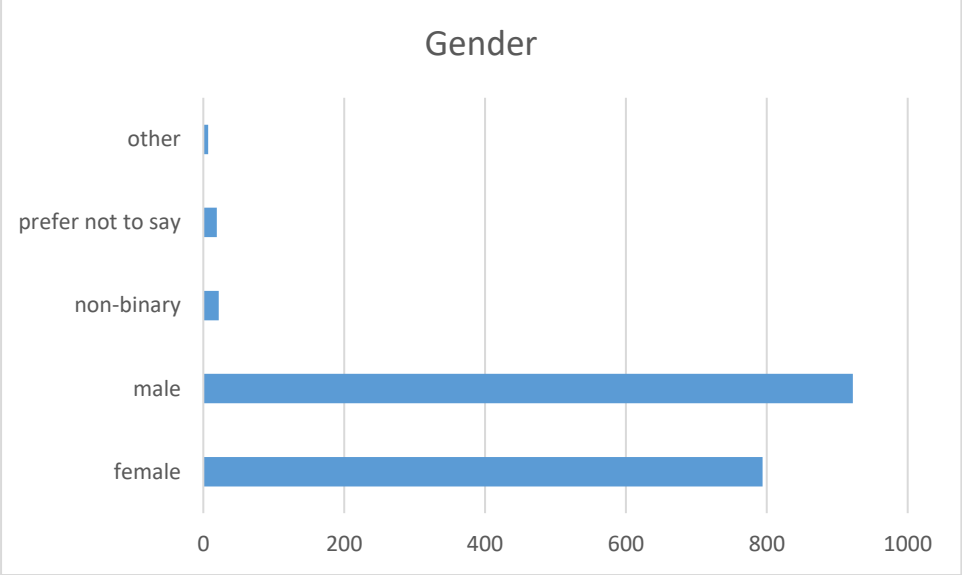

Chart 2

Gender (chart 2):

Female:

Count: 794, representing 45.0% of the total respondents.

p-value: <.001, indicating that the proportion of females is significantly different from 0.5 (less than half of the respondents are female).

Male:

Count: 922, making up 52.3% of the total respondents.

p-value: 0.060, suggesting that the proportion of males is not significantly different from 0.5. The p-value is close to the significance threshold, indicating that the proportion of males is slightly above 50%, but this is not highly statistically significant.

Non-binary:

Count: 22 (1.2% of respondents).

p-value: <.001, meaning the proportion is significantly different from 0.5. The very low count shows that non-binary respondents make up a very small percentage of the total.

Prefer not to say:

Count: 19 (1.1% of respondents).

p-value: <.001, indicating that this proportion is significantly different from 0.5, with very few respondents choosing not to disclose their gender.

Other:

Count: 7 (0.4% of respondents).

p-value: <.001, showing that very few respondents identified as "other," and this is significantly below 50%.

Age (See Chart 3):

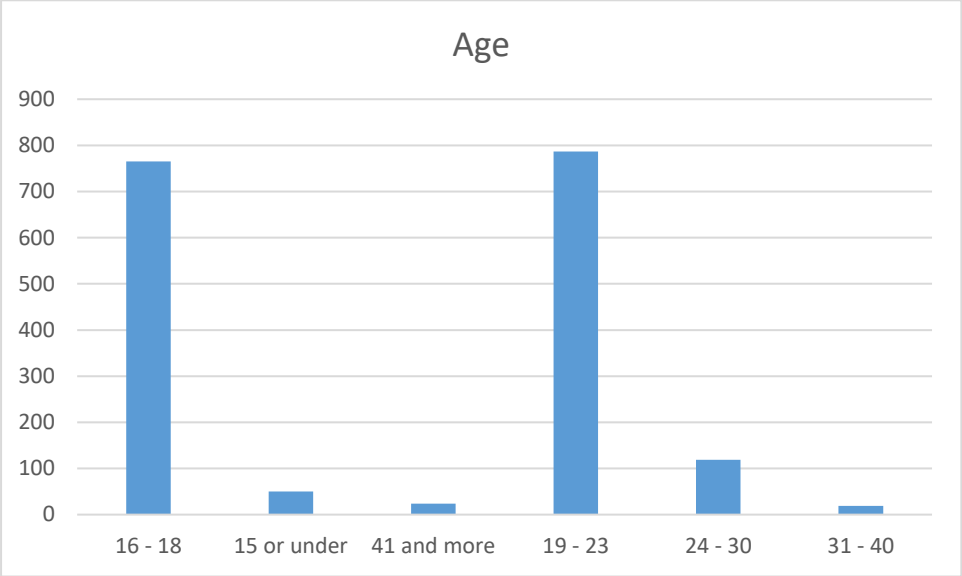

Chart 3

16–18:

Count: 765, representing 43.4% of respondents.

p-value: <.001, meaning this proportion is significantly different from 0.5. A substantial portion of respondents fall within this age group, but less than half.

15 or under:

Count: 50 (2.8% of respondents).

p-value: <.001, showing that very few respondents are 15 or younger, significantly lower than 50%.

41 and more:

Count: 24 (1.4% of respondents).

p-value: <.001, indicating a very small number of respondents in this age group, significantly different from 50%.

19–23:

Count: 787 (44.6% of respondents).

p-value: <.001, suggesting that a large number of respondents are in this age group, though still less than half.

24–30:

Count: 119 (6.7% of respondents).

p-value: <.001, showing a small proportion in this age range.

31–40:

Count: 19 (1.1% of respondents).

p-value: <.001, indicating a very small percentage in this age group.

Conclusions:

Gender Distribution:

The majority of respondents are male (52.3%), though this is not significantly higher than half of the sample population. The female respondents (45%) are a close second. Non-binary and other gender identities represent a very small fraction of respondents.

Age Distribution:

Most respondents fall within the 16–18 (43.4%) and 19–23 (44.6%) age ranges, indicating that the majority of the sample is young, predominantly in their late teens to early twenties.

Respondents under the age of 15, between 24–30, 31–40, or above 41 make up a very small portion of the total, with the 41 and above group being the least represented (1.4%).

This table suggests that the sample is skewed toward younger individuals and that the gender distribution is relatively balanced between males and females, although more males participated. Non-binary, "other," and older age groups are underrepresented in the sample.

Table 3

Paired Samples Contingency Tables

Contingency Tables

Mode of learning	Preferences in learning			Total
	learning through text	learning using video materials	learning using interactive and game-based learning materials	
digital	215	228	174	617
math	262	383	72	717
media	182	166	293	641
Total	659	777	539	1975

Based on the contingency table 3 and chart 4, several conclusions can be drawn about learning preferences across different modes of learning:

Video materials are the most popular format overall: Across all modes of learning, more respondents (777) prefer learning using video materials than any other method. This preference is particularly strong in the math category, where 383 respondents selected video learning as their preferred method.

Interactive and game-based learning is highly preferred in media learning: Among respondents who engage with media as their mode of learning, the highest preference (293) is for interactive and game-based learning materials. This suggests that media learners might be more engaged with interactive content compared to other modes.

Learning through text is more preferred in the math category: In the math mode of learning, the preference for learning through text (262) is higher than in other categories. This indicates that math learners may prefer more traditional methods like text-based resources, even though video materials are still the most favored.

The least preferred method in the math category is interactive and game-based materials: Only 72 respondents in the math category prefer interactive and game-based learning, indicating that this is not a favored format for math learning, compared to the other modes of learning.

Digital learners have a balanced distribution of preferences: For digital learners, the distribution of preferences is relatively balanced across the three learning formats, with learning using video materials (228) slightly more favored than learning through text (215) and interactive materials (174).

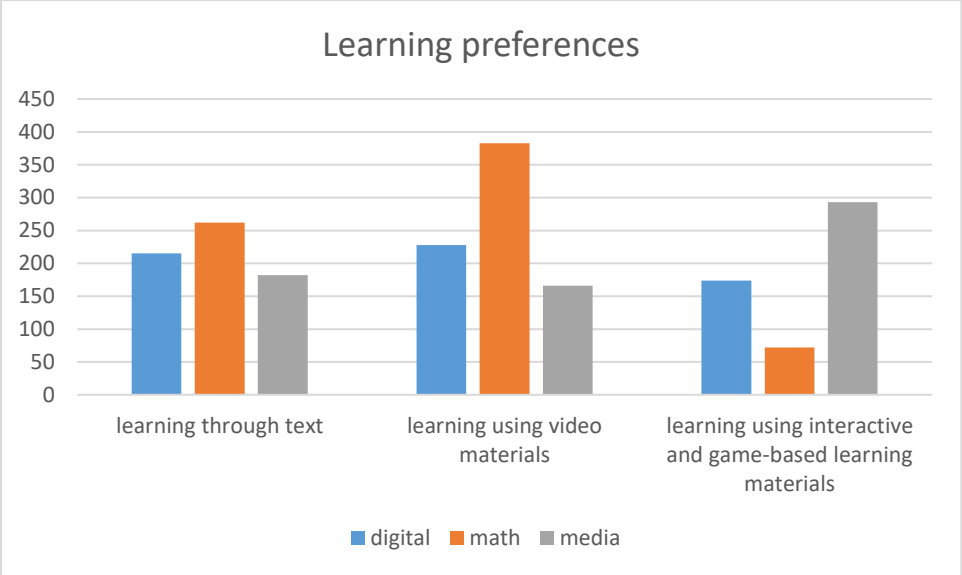

Chart 4

Overall Conclusion:

The data indicates that preferences in learning formats vary significantly depending on the mode of learning. Video materials are generally preferred across all modes, especially for math. However, for media learners, interactive materials are highly favored, while math learners tend to prefer text-based resources. This suggests that learning platforms and educators might need to tailor their content delivery depending on the subject matter to match the preferences of learners more effectively.

This donut chart represents the distribution of respondents by their preferred types of study materials. The chart categorizes preferences into three distinct types of learning materials:

Learning using video materials: This category is represented by the largest portion of the chart, with 662 respondents (41.82%) indicating that they prefer video-based learning.

Learning through text: The second most preferred method, 534 respondents (33.73%) prefer to study through text materials. This includes traditional reading and written resources.

Learning using interactive and game-based learning materials: A smaller portion of respondents, 305 respondents (19.27%), prefer interactive and game-based learning. Other: A very small segment of 82 respondents (5.18%) falls into the "other" category, indicating that their preferences are different or fall outside of the primary categories.

Conclusions:

Video-based learning is the most preferred method: The largest proportion of respondents (41.82%) indicated a preference for learning through video materials, suggesting that multimedia and visual aids are highly effective for many learners. Text-based learning remains significant: Despite the rise of video learning, a substantial portion (33.73%) still prefers text-based resources, demonstrating that traditional methods are still valuable for a large segment of learners.

Interactive learning is less preferred but important: While fewer respondents (19.27%) prefer interactive and game-based learning, this category is still significant, especially as interactive methods are becoming more common in education due to their engaging nature.

Other preferences are minimal: A small proportion (5.18%) indicated preferences outside of the main categories, which may suggest unique or unconventional learning preferences that might not be covered by the standard methods.

Overall Conclusion:

The chart reveals a clear preference for video materials as the dominant learning resource, followed by text. Interactive learning materials, though less popular, still hold importance, particularly in engaging students in more dynamic learning environments. Educational institutions and content creators can use this data to focus more on developing video content and supplementing it with text and interactive materials to cater to various learning styles.

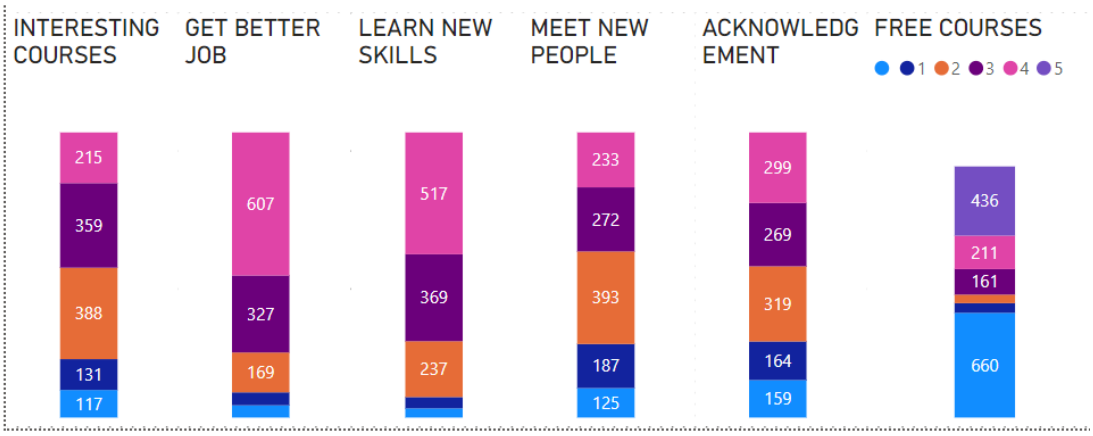

Chart 5

This stacked bar chart represents the distribution of responses across different factors that influence individuals' motivation, using a 5-point scale where each color represents a different level of motivation (from 1 to 5).

Key Categories and Observations:

Interesting Courses:

The highest number of respondents (388) rated this factor as a level 3 (orange), meaning a moderate level of motivation.

215 respondents rated it a level 5 (pink), indicating that a significant portion is highly motivated by interesting courses.

Overall, the responses are well-distributed across different levels.

Get Better Job:

This category has the highest number of respondents giving a level 5 (pink), with 607 people highly motivated by the desire to get a better job.

This makes "getting a better job" the strongest motivator among all the categories.

Learn New Skills:

Most respondents (517) rated this factor as a level 5 (pink), indicating that learning new skills is also a very strong motivator.

There is still substantial distribution across levels 3 and 4, but level 5 dominates.

Meet New People:

Responses are more balanced in this category, with 393 respondents choosing level 3 (orange) and 272 selecting level 4 (purple).

A lower number, 233, rated it a level 5, indicating that while social opportunities are important, they are not as strongly motivating as career-oriented factors.

Acknowledgement:

Similar to other categories, level 5 (pink) is the most selected, with 299 respondents finding acknowledgment to be a high motivator.

However, levels 3 (orange) and 4 (purple) also show substantial responses, meaning there is a more balanced distribution of how people value acknowledgment.

Free Courses:

Interestingly, the majority of respondents (660) rated this factor at a level 1 (blue), showing that free courses are not a strong motivator for most people.

Despite this, 436 respondents still rated free courses at a level 5 (purple), indicating a smaller but significant portion finds this a strong motivator.

Conclusions:

Career growth is the strongest motivator: "Get better job" stands out as the highest motivating factor, with the majority of respondents selecting level 5, followed closely

by "Learn new skills." This suggests that professional development is a key driver in educational engagement.

Acknowledgment and learning new skills are also important: Many respondents rated these categories highly (level 5), showing that gaining skills and receiving acknowledgment for accomplishments are important motivators.

Social interaction is less of a motivator: Although "Meet new people" has respondents across all levels, the number of high-level ratings (level 5) is smaller compared to other categories, indicating that social aspects might be secondary to career or skill acquisition motivations.

Free courses have a mixed response: A significant number of respondents rated free courses low (level 1), suggesting that offering free courses alone may not be enough to motivate learners. However, there is still a notable group that finds them highly motivating.

In summary (see table 4), educational platforms and institutions aiming to increase engagement should focus on providing opportunities for career advancement, skill development, and acknowledgment, as these factors are the most motivating for learners. While free courses can appeal to some, they may not be the strongest standalone motivator.

Table 4

Item Reliability Statistics - motivation

	Mean	SD
To learn new knowledge and skills	4.12	1.02
To meet new people	3.34	1.26
To get better job	4.28	1.05
To receive acknowledgement from people around	3.46	1.35
To receive certificate	4.27	1.07
These are interesting courses	3.49	1.12
The possibility to learn for free	3.98	1.22

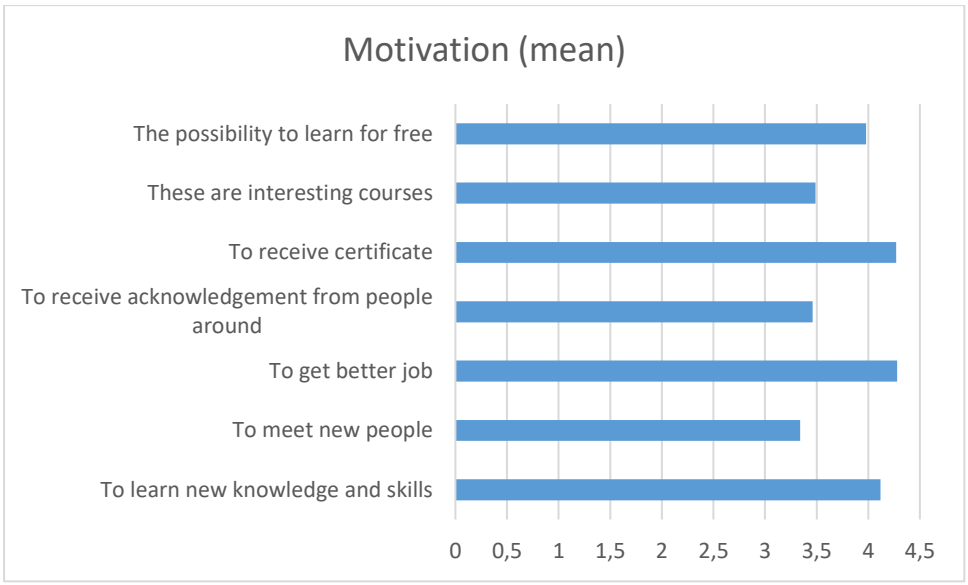

Chart 6

Career-related factors are the strongest motivators (see chart 6):

"To get a better job" and "To receive a certificate" have the highest means (4.28 and 4.27, respectively), showing that most respondents are motivated by factors that contribute to their career advancement.

Learning new knowledge is highly valued:

The mean of 4.12 for "To learn new knowledge and skills" indicates that many respondents are also motivated by the desire to acquire new skills and knowledge, which aligns closely with career development.

Social motivation is less important:

"To meet new people" has the lowest mean (3.34), suggesting that social interaction is not a strong motivator for most respondents, though there is notable variability in responses.

Free learning opportunities are appealing:

The possibility to learn for free (mean 3.98) is a relatively strong motivator, though slightly less significant than direct career benefits.

Variability in acknowledgment and social factors:

Motivation for acknowledgment from others has the highest standard deviation (1.35), indicating that there are mixed feelings about this factor. Some respondents may find it very important, while others do not.

In summary, the data suggests that learners are primarily motivated by opportunities that directly benefit their career or learning objectives, such as acquiring new skills, earning certificates, and getting better jobs. Social factors, while still relevant, are less significant in driving motivation for this group.

Table 5

Binomial Test

	Level	Count	Total	Proportion	p
Learning style preference - By reading	1	457	457	1.000	<.001
Learning style preference - By listening	1	826	826	1.000	<.001
Learning style preference - By looking at pictures, charts	1	627	627	1.000	<.001
Learning style preference - By participating in discussions	1	809	809	1.000	<.001
Learning style preference - By watching videos	1	678	678	1.000	<.001
Learning style preference - By practical work	1	1008	1008	1.000	<.001
Learning style preference - By role-playing	1	371	371	1.000	<.001
Learning style preference - Other	1	104	104	1.000	<.001

Note. H_a is proportion ≠ 0.5

As we can see from summarized data in table 5:

Practical work is the most preferred learning style:

With 1008 respondents (the highest count), learning by practical work is the most popular style, indicating a strong preference for hands-on experience.

Listening and discussions are highly preferred:

A large number of respondents (826 and 809, respectively) prefer learning by listening and participating in discussions, indicating that auditory and conversational learning methods are effective for many people.

Visual learning methods are also popular:

627 respondents prefer learning through pictures and charts, which shows that visual learning styles are important, though not as widely preferred as practical work, listening, or discussions.

Reading and watching videos are less favored but still significant:

Reading (457 respondents) and watching videos (678 respondents) are less popular but still significant learning preferences, demonstrating a reliance on both textual and multimedia resources for learning.

Role-playing is the least popular:

Role-playing (371 respondents) has the lowest count, indicating that it is the least preferred learning style compared to the others. However, it is still important to a smaller subset of learners.

Diverse learning preferences:

The fact that 104 respondents selected "Other" suggests that there are additional learning preferences not covered by the main categories in this table, highlighting the diversity in how people prefer to learn.

Overall Conclusion:

The data reveals that practical work is the most preferred learning style, followed by listening, discussions, and visual learning methods. Traditional reading and watching videos are still important but are less favored compared to more interactive or experiential styles. Role-playing has the lowest preference, though it remains significant for certain respondents. This variety of preferences indicates the need for diverse teaching methods to accommodate different learning styles.

Based on the data from the binomial test of learning style preferences, several conclusions can be drawn about how organizations and educational institutions can structure the learning process to better accommodate diverse learning preferences.

Table 6
Descriptives

	Education	By reading	By listening	By looking at pictures, charts	By participating in discussions	By watching videos	By practical work	By role-playing	Other
N	**Secondary school**	61	112	59	94	90	124	42	10
	Professional qualifications	47	84	89	100	78	118	49	9
	High school	83	168	112	141	122	180	74	21
	Other	81	152	108	131	149	190	49	40
	Higher education	185	310	259	343	239	396	157	24

This table 6 presents a breakdown of learning style preference s by education level, showing how individuals with different educational backgrounds prefer various methods of learning, such as reading, listening, visual aids, discussions, watching videos, practical work, role-playing, and other approaches. The rows indicate education levels, and the columns indicate the different learning styles.

Key Findings by Education Level:

For students with educational level - Secondary School:

Listening (112) and practical work (124) are the most preferred learning methods for individuals with a secondary school education.

Reading (61) and role-playing (42) are less popular but still significant.

Visual learning (59) and videos (90) also appeal to a moderate number of individuals in this group.

For students with professional Qualifications:

People in this group prefer participating in discussions (100) and practical work (118).

Listening (84) and looking at pictures/charts (89) are also notable learning preferences.

Reading (47) and watching videos (78) are less popular compared to other methods.

For students from High School:

Individuals with high school education have a strong preference for listening (168) and practical work (180).

Participating in discussions (141) and watching videos (122) are also widely preferred.

Reading (83) and role-playing (74) are less favored but still important for some learners.

For other groups of students (uncategorized education):

This group shows a diverse range of preferences, with high numbers for listening (152), participating in discussions (131), and practical work (190).

Watching videos (149) and visual learning (108) are also significant.

There is a relatively lower preference for reading (81) and role-playing (49).

For students with Higher Education:

Practical work (396) is the most preferred learning style for those with higher education, followed by participating in discussions (343) and listening (310).

Visual learning (259) and watching videos (239) are also popular.

Role-playing (157) and reading (185), though less preferred, still have substantial support in this group.

Overall Conclusions for Organizing the Learning Process:

Emphasize Practical, Hands-On Learning:

Across all education levels, practical work is consistently one of the most preferred learning methods. This suggests that practical, hands-on experiences such as labs, workshops, and interactive projects should be integrated into educational programs, particularly for those with higher education or in professional qualification tracks.

Incorporate Listening-Based Learning:

Listening is highly favored across most educational levels, especially among individuals with high school or higher education backgrounds. This could include lectures, podcasts, or audio-based materials to cater to these learners.

Promote Interactive Discussions:

Discussions are also a popular learning method, particularly for individuals with higher education, professional qualifications, and high school education. Incorporating group discussions, debates, and interactive seminars can help engage these learners and facilitate deeper understanding.

Visual and Video Learning Should Be Used Widely:

Watching videos and using visual aids (charts, pictures) are consistently important across education levels. This implies that multimedia content, including educational videos and visual aids like infographics, should be integrated into the learning process.

Role-Playing and Other Interactive Methods for Higher Education:

While role-playing has lower numbers overall, it is notably more popular among those with higher education (157). This suggests that role-playing simulations could be an effective tool for advanced learners, particularly in scenarios such as business, leadership, or healthcare training.

Offer Reading as a Supplementary Learning Style:

Reading is generally less preferred, especially among those with lower educational levels (e.g., secondary school). It could be more effective as a supplementary method rather than the primary approach for most learners.

Tailoring Learning Strategies by Education Level:

For secondary school and high school learners: Focus on listening-based instruction, practical work, and visual learning methods. Engage them with discussions but ensure materials are accessible through multimedia and hands-on activities.

For professional qualifications: Discussions and practical work should be emphasized. Less focus should be placed on reading, while interactive methods such as role-playing can be useful for specific training scenarios.

For higher education learners: Utilize a mix of practical work, discussions, visual learning, and role-playing. These learners thrive on interactive, experiential learning combined with theoretical discussions and multimedia content.

By tailoring educational strategies to these preferences, institutions can create more engaging and effective learning environments that resonate with individuals based on their educational background.

Key Conclusions for Organizing the Learning Process:

Incorporate Practical, Hands-On Learning:

The most preferred learning style (with 1008 respondents) is learning through practical work. This highlights the importance of hands-on experience, experiments, workshops, and real-world applications in the learning process. Learning environments should prioritize opportunities for students to practice what they learn, through projects, labs, or interactive simulations.

Offer a Variety of Learning Formats:

A significant number of respondents prefer listening (826), participating in discussions (809), and watching videos (678). This suggests that offering a mix of lectures, audio-based learning (such as podcasts or recorded talks), and interactive discussion-based sessions (such as seminars, debates, or group projects) can cater to different learner types. Online learning platforms could provide recorded audio-visual content for flexibility, while in-person or virtual discussions can encourage deeper engagement.

Use Visual Aids and Charts:

Visual learning methods, like looking at pictures and charts (627 respondents), are also a key preference. Therefore, integrating infographics, charts, graphs, and diagrams into the learning material can enhance understanding, especially for complex concepts. Visual aids can help break down information and make it more accessible to learners who grasp information better visually.

Diversify Content Delivery:

Reading (457 respondents), although less preferred compared to practical work and listening, remains an important method. Providing well-written text-based resources such as articles, eBooks, or structured notes is essential for learners who absorb

information through reading. Institutions should combine this with other styles to cater to learners who benefit from both textual and audio-visual formats.

Encourage Role-Playing and Simulations:

While role-playing (371 respondents) was the least popular method, it still appeals to a notable number of learners. Including role-playing exercises, especially for fields like business, leadership, or customer interaction, can help develop soft skills, negotiation tactics, and problem-solving abilities. Role-playing can simulate real-world environments where learners can practice responses and decision-making in a safe setting.

Flexibility for "Other" Preferences:

The fact that 104 respondents selected "Other" indicates that some learners may have unique or non-traditional preferences. This underscores the importance of flexibility in the learning process. Educational programs should provide varied and adaptable learning opportunities that allow students to pursue methods that suit their individual learning styles.

Recommendations for Organizing the Learning Process:

Blended Learning: A combination of hands-on activities, audio-visual content (lectures, videos), interactive discussions, and textual materials will provide a well-rounded experience. This approach ensures that various learning preferences are addressed, thereby improving engagement and retention.

Personalized Learning Paths: Offering different tracks or learning pathways that allow students to engage in their preferred learning style (e.g., practical projects for hands-on learners, videos for visual learners) will make learning more effective and tailored to individual needs.

Interactive Elements: Incorporating tools like quizzes, case studies, role-playing games, and group discussions can make the learning process more dynamic and responsive to diverse needs.

Frequent Feedback and Adjustments: Educators should regularly collect feedback on the learning methods used, to adapt and refine the process as necessary, ensuring that students' learning preferences are adequately met.

Overall Conclusion:

To optimize the learning process, educational organizations should design curricula that emphasize practical, real-world applications while also offering diverse formats like listening, discussions, and visual aids. A flexible, blended learning approach will accommodate the varying preferences of learners, ultimately leading to better educational outcomes.

Table 7
Descriptives

	Gender	Motivation-To learn new knowledge and skills	Motivation-To meet new people	Motivation-To get better job	Motivation-To receive acknowledgement from people around	Motivation-To receive certificate	Motivation-These are interesting courses	Motivation-The possibility to learn for free
N	**female**	794	794	794	794	794	794	641
	male	922	922	922	922	922	922	709
	non-binary	22	22	22	22	22	22	12
	prefer not to say	19	19	19	19	19	19	8
	other	7	7	7	7	7	7	5
Mean	**female**	4.08	3.22	4.22	3.35	4.11	3.50	4.05
	male	4.07	3.34	4.12	3.33	3.88	3.28	3.91
	non-binary	3.32	2.95	3.68	3.00	3.36	3.27	4.08
	prefer not to say	3.53	2.95	3.11	2.63	2.74	3.11	3.75
	other	3.14	3.29	3.29	3.43	4.29	3.43	4.60

This table (No 7) provides the number of respondents (N) and the mean levels of motivation for different categories across gender identities. The motivational factors include learning new knowledge, meeting new people, getting a better job, receiving acknowledgment, obtaining a certificate, finding courses interesting, and the possibility of learning for free. Here's an analysis of gender-based differences regarding motivation:

Key Gender-Based Conclusions:

1. Motivation to Learn New Knowledge and Skills:

Females have a slightly higher average motivation (4.08) compared to males (4.07). Both genders have high motivation for learning new knowledge and skills.

Non-binary respondents show a lower mean (3.32) compared to males and females.

Other respondents show a lower mean (3.14), while those who prefer not to say are slightly more motivated (3.53).

2. Motivation to Meet New People:

Males (3.34) are slightly more motivated by meeting new people compared to females (3.22).

Non-binary respondents have the lowest motivation for this factor (2.95).

Respondents in the "other" category show relatively higher motivation (3.29) to meet new people, higher than non-binary and those who prefer not to say.

3. Motivation to Get a Better Job:

Females (4.22) are more motivated by the prospect of getting a better job than males (4.12).

Non-binary respondents again show a slightly lower motivation (3.68), while those who prefer not to say have the lowest average motivation (3.11).

The "other" category shows comparable motivation (3.29).

4. Motivation to Receive Acknowledgment:

Motivation to receive acknowledgment from others is relatively low across all genders.

Females (3.35) and males (3.33) have very similar motivation in this area.

Non-binary respondents (3.00) and those who prefer not to say (2.63) report lower motivation for acknowledgment.

The "other" group shows the highest mean (3.43), suggesting that acknowledgment is a more important motivator for this group.

5. Motivation to Receive a Certificate:

Females (4.11) are more motivated by receiving certificates than males (3.88).

Non-binary respondents (3.36) show lower motivation for receiving a certificate.

Interestingly, the "other" group shows the highest motivation for certificates (4.29), suggesting that formal recognition may be particularly important for this group.

6. Motivation – Interesting Courses:

Females (3.50) show slightly more motivation than males (3.38) in finding the courses interesting.

Non-binary respondents (3.36) and those who prefer not to say (2.74) report lower motivation.

The "other" group shows higher motivation (4.29), similar to their strong motivation for acknowledgment and certificates.

7. Motivation – Possibility to Learn for Free:

Females (4.05) are slightly more motivated by free learning opportunities than males (3.91).

Non-binary respondents show the highest motivation (4.08) for this factor.

Respondents in the "other" category are the most motivated by free learning (4.60), followed closely by those who prefer not to say (3.75).

Overall Conclusions:

Females tend to have higher motivation in key areas such as getting a better job, receiving certificates, and learning new knowledge and skills, with a notably strong motivation for career-related outcomes like certificates and job prospects.

Males are generally more motivated to meet new people than females but show slightly less motivation for obtaining certificates and job-related opportunities than females.

Non-binary respondents tend to have lower motivation across several categories, particularly in acknowledgment and meeting new people, though they show stronger motivation for the possibility of learning for free.

The "other" group exhibits a high level of motivation for several factors, especially the possibility of learning for free, receiving certificates, and finding courses interesting, suggesting that they might place more value on formal recognition and accessible learning opportunities.

Those who prefer not to say their gender generally show lower levels of motivation across most factors, especially in the areas of acknowledgment and interesting courses, although they have moderate motivation for free learning.

Implications:

Career growth (getting a better job, receiving certificates) and learning opportunities (knowledge acquisition, free courses) are the strongest motivators for both males and females, with females showing slightly higher averages in these areas.

Social interaction (meeting new people, acknowledgment) seems less important to most respondents, especially for non-binary individuals and those preferring not to disclose their gender.

Tailoring learning programs to emphasize career advancement and accessible education (like free learning opportunities) may be more effective in engaging learners across all gender identities.

Table 8
Frequencies of Motivation-To learn new knowledge and skills

Motivation-To learn new knowledge and skills	Education	Counts	% of Total	Cumulative %
5	**Secondary school**	69	3.9%	3.9%
	Professional qualifications	97	5.5%	9.4%
	High school	142	8.0%	17.5%
	Other	127	7.2%	24.7%
	Higher education	317	18.0%	42.6%
4	**Secondary school**	83	4.7%	47.3%

	Professional qualifications	60	3.4%	50.7%
	High school	102	5.8%	56.5%
	Other	98	5.6%	62.1%
	Higher education	188	10.7%	72.7%
3	**Secondary school**	52	2.9%	75.7%
	Professional qualifications	46	2.6%	78.3%
	High school	74	4.2%	82.5%
	Other	81	4.6%	87.1%
	Higher education	108	6.1%	93.2%
2	**Secondary school**	13	0.7%	93.9%
	Professional qualifications	8	0.5%	94.4%
	High school	13	0.7%	95.1%
	Other	15	0.9%	96.0%
	Higher education	13	0.7%	96.7%
1	**Secondary school**	14	0.8%	97.5%
	Professional qualifications	5	0.3%	97.8%
	High school	13	0.7%	98.5%
	Other	13	0.7%	99.3%
	Higher education	13	0.7%	100.0%

Table 9

Frequencies of Motivation-To meet new people

Motivation-To meet new people	Education	Counts	% of Total	Cumulative %
5	**Secondary school**	30	1.7%	1.7%
	Professional qualifications	56	3.2%	4.9%
	High school	68	3.9%	8.7%
	Other	65	3.7%	12.4%
	Higher education	143	8.1%	20.5%
4	**Secondary school**	39	2.2%	22.7%
	Professional qualifications	46	2.6%	25.3%
	High school	83	4.7%	30.0%
	Other	65	3.7%	33.7%
	Higher education	162	9.2%	42.9%
3	**Secondary school**	69	3.9%	46.8%
	Professional qualifications	56	3.2%	50.0%
	High school	106	6.0%	56.0%
	Other	125	7.1%	63.1%
	Higher education	198	11.2%	74.3%
2	**Secondary school**	55	3.1%	77.4%
	Professional qualifications	37	2.1%	79.5%
	High school	51	2.9%	82.4%
	Other	47	2.7%	85.1%
	Higher education	83	4.7%	89.8%
1	**Secondary school**	38	2.2%	92.0%
	Professional qualifications	21	1.2%	93.1%
	High school	36	2.0%	95.2%

	Other	32	1.8%	97.0%
	Higher education	53	3.0%	100.0%

Table 10

Frequencies of Motivation-To get better job

Motivation-To get better job	Education	Counts	% of Total	Cumulative %
5	**Secondary school**	68	3.9%	3.9%
	Professional qualifications	121	6.9%	10.7%
	High school	177	10.0%	20.7%
	Other	123	7.0%	27.7%
	Higher education	397	22.5%	50.2%
4	**Secondary school**	87	4.9%	55.2%
	Professional qualifications	50	2.8%	58.0%
	High school	80	4.5%	62.5%
	Other	102	5.8%	68.3%
	Higher education	162	9.2%	77.5%
3	**Secondary school**	47	2.7%	80.2%
	Professional qualifications	32	1.8%	82.0%
	High school	50	2.8%	84.8%
	Other	69	3.9%	88.7%
	Higher education	44	2.5%	91.2%
2	**Secondary school**	14	0.8%	92.0%
	Professional qualifications	8	0.5%	92.5%
	High school	11	0.6%	93.1%
	Other	19	1.1%	94.2%
	Higher education	27	1.5%	95.7%

1	**Secondary school**	15	0.9%	96.5%
	Professional qualifications	5	0.3%	96.8%
	High school	26	1.5%	98.3%
	Other	21	1.2%	99.5%
	Higher education	9	0.5%	100.0%

Table 11

Frequencies of Motivation-To receive acknowledgement from people around

Motivation-To receive acknowledgement from people around	Education	Counts	% of Total	Cumulative %
5	**Secondary school**	49	2.8%	2.8%
	Professional qualifications	61	3.5%	6.2%
	High school	113	6.4%	12.6%
	Other	62	3.5%	16.2%
	Higher education	170	9.6%	25.8%
4	**Secondary school**	36	2.0%	27.8%
	Professional qualifications	44	2.5%	30.3%
	High school	69	3.9%	34.2%
	Other	75	4.3%	38.5%
	Higher education	150	8.5%	47.0%
3	**Secondary school**	57	3.2%	50.2%
	Professional qualifications	63	3.6%	53.8%
	High school	68	3.9%	57.7%

	Other	108	6.1%	63.8%
	Higher education	165	9.4%	73.1%
2	**Secondary school**	51	2.9%	76.0%
	Professional qualifications	24	1.4%	77.4%
	High school	41	2.3%	79.7%
	Other	46	2.6%	82.3%
	Higher education	82	4.6%	87.0%
1	**Secondary school**	38	2.2%	89.1%
	Professional qualifications	24	1.4%	90.5%
	High school	53	3.0%	93.5%
	Other	43	2.4%	95.9%
	Higher education	72	4.1%	100.0%

Table 12

Frequencies of Motivation-To receive certificate

Motivation-To receive certificate	Education	Counts	% of Total	Cumulative %
5	**Secondary school**	76	4.3%	4.3%
	Professional qualifications	120	6.8%	11.1%
	High school	195	11.1%	22.2%
	Other	104	5.9%	28.1%
	Higher education	356	20.2%	48.2%
4	**Secondary school**	39	2.2%	50.5%
	Professional qualifications	43	2.4%	52.9%
	High school	68	3.9%	56.7%

	Other	67	3.8%	60.5%
	Higher education	145	8.2%	68.8%
3	**Secondary school**	50	2.8%	71.6%
	Professional qualifications	35	2.0%	73.6%
	High school	45	2.6%	76.1%
	Other	85	4.8%	81.0%
	Higher education	90	5.1%	86.1%
2	**Secondary school**	46	2.6%	88.7%
	Professional qualifications	9	0.5%	89.2%
	High school	16	0.9%	90.1%
	Other	35	2.0%	92.1%
	Higher education	22	1.2%	93.3%
1	**Secondary school**	20	1.1%	94.4%
	Professional qualifications	9	0.5%	95.0%
	High school	20	1.1%	96.1%
	Other	43	2.4%	98.5%
	Higher education	26	1.5%	100.0%

Table 13

Frequencies of Motivation-These are interesting courses

Motivation-These are interesting courses	Education	Counts	% of Total	Cumulative %
5	**Secondary school**	22	1.2%	1.2%
	Professional qualifications	30	1.7%	2.9%
	High school	64	3.6%	6.6%
	Other	51	2.9%	9.5%
	Higher education	154	8.7%	18.2%
4	**Secondary school**	60	3.4%	21.6%

	Professional qualifications	57	3.2%	24.8%
	High school	97	5.5%	30.3%
	Other	96	5.4%	35.8%
	Higher education	212	12.0%	47.8%
3	**Secondary school**	85	4.8%	52.6%
	Professional qualifications	85	4.8%	57.4%
	High school	111	6.3%	63.7%
	Other	113	6.4%	70.1%
	Higher education	189	10.7%	80.8%
2	**Secondary school**	25	1.4%	82.3%
	Professional qualifications	20	1.1%	83.4%
	High school	43	2.4%	85.8%
	Other	36	2.0%	87.9%
	Higher education	60	3.4%	91.3%
1	**Secondary school**	39	2.2%	93.5%
	Professional qualifications	24	1.4%	94.8%
	High school	29	1.6%	96.5%
	Other	38	2.2%	98.6%
	Higher education	24	1.4%	100.0%

Based on the data from the "Frequencies of Motivation" (tables 8-13) , several conclusions can be drawn about how education levels influence different motivations for learning:

1. Motivation to Learn New Knowledge and Skills:

Individuals with higher education (18%) show the highest motivation, followed by those with high school (8%) and professional qualifications (5.5%).

Secondary school students have the lowest percentage (3.9%) for high motivation (level 5).

Overall, the data suggests that as education levels increase, so does the motivation to acquire new knowledge and skills, particularly in those pursuing higher education.

2. Motivation to Meet New People:

The highest motivation to meet new people is seen in individuals with higher education (8.1%), followed by high school (3.9%) and professional qualifications (3.2%).

Motivation in this area is comparatively low across all educational levels, indicating that social interaction is not a primary driver for most learners, though it increases slightly at the higher education level.

3. Motivation to Get a Better Job:

Higher education respondents again report the highest motivation (22.5%), indicating that career advancement is a significant factor for those at this level.

High school respondents follow with 10%, suggesting that individuals in high school are also thinking about career opportunities.

Secondary school and professional qualification holders show a lower motivation, suggesting that younger students and those in professional programs may prioritize other aspects of learning.

4. Motivation to Receive Acknowledgment:

Individuals with higher education (9.6%) and high school (6.4%) are most motivated by acknowledgment from others, though this is still a secondary motivator.

Secondary school and professional qualifications show lower percentages, suggesting that formal acknowledgment is less important at these levels of education.

5. Motivation to Receive a Certificate:

The desire to earn certificates is particularly high in those with higher education (20.2%) and high school (11.1%), reflecting a strong connection between formal qualifications and motivation.

Professional qualifications also report a relatively high level of motivation (6.8%), likely due to the focus on earning credentials in these programs.

6. Motivation – These Are Interesting Courses:

The highest motivation comes from individuals with higher education (8.7%) and high school (3.6%).

This suggests that students at higher levels are more likely to find courses interesting and engaging.

Professional qualifications report a lower motivation (1.7%) for this factor, which may indicate that these programs are more focused on outcomes rather than intrinsic interest in the material.

Overall Trends:

Career-driven motivation increases with education level: As individuals pursue higher levels of education, motivation to acquire new knowledge and skills, get a better job, and receive certificates becomes more prominent. This suggests that career and professional advancement are strong motivators for higher education students.

Social motivation is secondary: Across all education levels, the motivation to meet new people or receive acknowledgment from others is generally low compared to other factors. These findings suggest that social aspects of learning are less important compared to career-related goals.

Certificates and formal acknowledgment are valued: The desire to earn certificates and formal recognition is particularly strong among higher education students, reflecting the importance of credentials in achieving career success.

Engagement with course content is higher in higher education: Learners in higher education are more likely to find their courses interesting, which may reflect the more specialized and advanced nature of the material at this level.

IMPLICATIONS FOR LEARNING PROCESS ORGANIZATION:

Focus on Career Advancement:

The data clearly highlights that students, particularly those in higher education, are highly motivated by career-oriented outcomes such as acquiring new knowledge, skills, and certifications. For this reason, learning programs should place a stronger emphasis on demonstrating the tangible career benefits of education. This can be done by integrating real-world applications into the curriculum, offering career counseling, job placement assistance, and industry partnerships.

Practical skill development: Emphasize courses that focus on developing practical, marketable skills that are in demand in the workforce. Offering learners opportunities to apply their knowledge through internships, project-based learning, and case studies will align with their desire for career advancement.

Networking opportunities with professionals: Instead of emphasizing purely social interactions, institutions can provide career-focused networking events, such as seminars or talks by industry professionals, that allow students to build connections directly related to their career goals.

Provide Certification Pathways:

Given the high motivation across various educational levels to earn certifications, institutions should create clear, accessible certification pathways. This can be particularly important for those in professional qualification programs, where obtaining formal recognition can have immediate career benefits.

Stackable credentials: Institutions can offer stackable certification programs where learners can accumulate credits or short-term certifications that lead to larger qualifications over time. This approach would allow learners to track their progress and build their credentials in stages, providing immediate incentives and long-term career benefits.

Industry-recognized certifications: Align certification programs with industry standards and professional bodies, ensuring that the certificates learners earn are recognized by employers in their respective fields. This not only enhances the perceived value of the certifications but also increases the likelihood of learner engagement.

Engage Higher Education Learners with Interesting Content:

Since learners in higher education show a high level of interest in course content, programs should focus on creating engaging, relevant, and innovative learning materials that connect with students' career aspirations. This could include introducing interdisciplinary approaches, integrating emerging technologies, or emphasizing current industry trends within the curriculum.

Customization of learning paths: Offering personalized or flexible learning paths that allow students to focus on areas they find most engaging could enhance their motivation. Tailored electives or project-based learning opportunities can give students a sense of ownership over their education and increase their intrinsic interest in the material.

Interactive and multimedia content: Leveraging interactive and multimedia resources (e.g., simulations, videos, podcasts) can make learning more dynamic and engaging for students, further increasing their motivation to participate actively in the learning process.

Social Interaction Can Be De-emphasized:

The relatively low levels of motivation to meet new people suggest that educational programs may not need to place as much emphasis on the social aspects of learning. Instead, institutions can focus on supporting individual achievement and career development. While peer collaboration remains important for certain group projects or assignments, social engagement can be more goal-oriented (e.g., group projects tied to real-world scenarios).

Promote individual progress: Institutions might create environments where students can focus on individual learning goals, personal development, and self-paced study. For example, offering flexible deadlines, online or hybrid course models, and independent research opportunities would allow students to progress at their own pace, catering to their individual learning styles and schedules.

Collaborative learning in context: Social interaction doesn't need to be completely removed but can be framed within a context of collaboration towards a shared goal, such as group work on industry-related projects or co-developing solutions to real-world problems. This allows for professional-level engagement that still benefits the learning process without focusing on purely social dynamics.

Incorporate Real-World Challenges and Scenarios:

To align with the motivations to gain practical knowledge and certifications, courses could integrate real-world challenges that students may face in their respective industries. For instance, offering problem-solving activities, simulations, or projects that reflect actual job scenarios could help students develop skills in a realistic context. This approach would give students a sense of purpose and relevance in their learning, reinforcing the connection between their education and career outcomes.

Case-based learning: Incorporating case studies where students analyze and provide solutions to real business, technological, or social challenges can offer valuable hands-on experience. It provides students with the opportunity to apply theoretical knowledge to practical situations, making their learning more meaningful and immediately relevant to their career objectives.

Build Flexibility into Learning Programs:

Given the diversity in motivational factors, institutions should also strive to offer flexible learning environments that allow learners to adjust their educational pathways based on their needs. This could include online or hybrid options, short-term intensive courses, or the ability to choose from a variety of electives to suit individual preferences.

Adaptive learning technology: Using adaptive learning platforms that adjust content delivery based on learner progress and feedback can enhance the student experience. These platforms can identify areas where a student needs more support and provide additional resources, making the learning process more personalized and effective.

Focus on Skill-Based Learning for Younger Students:

For secondary school and high school students, whose motivations are lower for career-related goals, institutions could focus on building foundational skills that set the stage for future educational and professional success. Instead of placing too much emphasis on certifications or job readiness at this stage, programs might concentrate on developing critical thinking, problem-solving, and lifelong learning skills.

Exploratory learning: Offering courses that allow younger students to explore different fields and discover their interests can keep them engaged in the learning process and encourage them to develop a passion for learning. This could be achieved through diverse electives or extracurricular activities that help students identify their future career interests.