

# Podcast as Road Safety Education Media for Adult Drivers in Indonesia: Development and Effectiveness Using Uses and Gratifications

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## ABSTRACT

**Purpose:** This study aimed to develop a podcast titled "SaveDrive ID" as a road safety education medium and evaluate its effectiveness among active drivers in Indonesia. **Methods:** The study employed Research and Development (R&D) using the 4D model (Define, Design, Develop, Disseminate). A needs analysis was conducted with 30 drivers; expert validation was performed by content and media specialists; and effectiveness was measured using Gratifications Sought (GS) and Gratifications Obtained (GO) instruments on 100 active drivers in Bogor, Indonesia. **Findings:** Expert validation yielded an overall feasibility score of 85.47%. GS-GO gap analysis showed positive gaps across all four dimensions: cognitive (+10.87%), affective (+8.20%), tension release (+7.87%), and personal integration (+6.00%), with an overall gap of +8.23% and mean GO score of 90.43%, all categorized as Highly Satisfying. These findings confirm that SaveDrive ID effectively exceeded user gratification expectations across all measured dimensions. **Research Implications:** Podcast is a viable, flexible, and impactful medium for non-formal road safety education that can reach active adult drivers without the constraints of conventional in-person delivery. Practitioners and policymakers may consider integrating podcast-based content into formal and non-formal driver education programs. This study is limited by the absence of a behavioral outcome measure and single-location purposive sampling, which future research should address. **Originality:** This study uniquely combines the 4D R&D model with the Uses and Gratifications framework to develop and evaluate a road safety podcast for adult drivers in Indonesia context and population not previously addressed in the educational media development literature.



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## INTRODUCTION

Road traffic accidents in Indonesia remain a critical public safety issue, with human error drowsiness, insufficient anticipation, and poor defensive driving knowledge identified as the dominant cause (Oktavianti et al., 2023). High-risk corridors such as Jl. Raya Narogong No. 57, Bogor are among the locations where these behavioral factors have contributed to documented fatalities (Turangan & Mardiaman, 2025). Conventional road safety education delivered through in-person seminars or printed materials is structurally limited: it requires physical attendance and direct facilitation, constraining reach to mobile professional driver populations. Adult road safety training programs show only mild-to-moderate effects when delivered through traditional formats (Faus et al., 2023).

Digital media development has opened new possibilities for non-formal education delivery. Manegesa et al. (2025) demonstrated that R&D-developed digital learning media consistently achieves high feasibility ratings through expert validation findings applicable to informal adult education contexts. Podcasts are particularly compelling: they combine audio-visual content delivery with on-demand, platform-independent accessibility and are already widely consumed on YouTube and Spotify in Indonesia (Rambe et al., 2024). Health-related podcasts have been shown to achieve strong engagement and measurable effects on knowledge and behavioral intentions (Zou et al., 2025). Furthermore, podcast listeners demonstrate high rates of self-directed learning, with over half engaging in intentional knowledge acquisition when content is accessible and contextually relevant (Meden et al., 2024). A scoping review of podcast use in adult health education confirmed that podcasts are effective, innovative, and low-cost tools for promoting behavioral change and user satisfaction outside formal institutional settings (Amador et al., 2024). Yet podcast-based road safety education for adult drivers remains empirically unexplored. Despite the growing body of evidence on podcast-based education in academic settings, no study has

systematically examined whether podcasts can serve as an effective road safety education medium for active adult drivers a population with higher real-world accident exposure than student populations typically studied.

This study employs the Uses and Gratifications (U&G) theory to evaluate media effectiveness. U&G operationalizes effectiveness through the gap between Gratifications Sought (GS) pre-use expectations and Gratifications Obtained (GO) post-use satisfaction (Bahfiarti & Arianto, 2022). A positive  $GO > GS$  gap indicates that the medium exceeded user expectations (Nugroho & Panjaitan, 2021). Therefore, this study addresses the following research questions: (1) How is the SaveDrive ID podcast developed as a road safety education medium using the 4D R&D model? and (2) To what extent does the podcast effectively satisfy the gratification needs of active drivers as measured by the GS-GO gap analysis?.

## METHOD

This study employed the Research and Development (R&D) approach using the 4D model (Aimmah & Amin, 2025), consisting of four sequential phases: Define, Design, Develop, and Disseminate. The research was conducted at a Pertamina fuel station on Jl. Raya Narogong No. 57, Bogor, Indonesia strategic transit corridor on the Bekasi–Bogor route with high daily vehicle volume and documented road safety concerns.

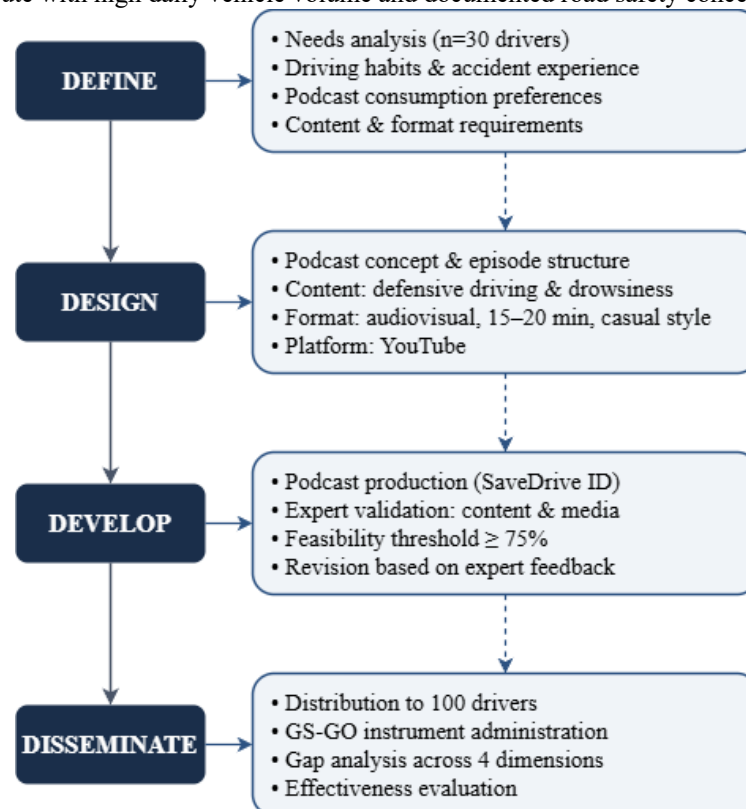


Figure 1. Research Procedure of the 4D Development Model

In the Define phase, needs analysis was conducted with 30 drivers covering driving habits, accident experience, and podcast consumption preferences. The Design phase produced the "SaveDrive ID" podcast: a two-episode audiovisual series (Episode 1: drowsiness management; Episode 2: defensive driving), designed for 15–20 minutes duration, relaxed conversational style, and distributed via YouTube. In the Develop phase, the podcast was validated by a content expert (road safety) and a media expert (digital communication), with a  $\geq 75\%$  feasibility threshold required for dissemination.

In the Disseminate phase, pilot testing was conducted on February 18, 2026, followed by main data collection from February 19–22, 2026 ( $n=100$  drivers, 25/day). Each respondent followed six steps: (1) approach ( $\pm 1$  min); (2) GS questionnaire ( $\pm 2$  min); (3) podcast viewing via QR code full episodes ( $\pm 33$  min) or trailer ( $\pm 2$  min) based on availability; (4) GO questionnaire ( $\pm 2$  min); (5) token of appreciation; (6) optional documentation photo. The decision to offer both viewing options was driven by the naturalistic field context: respondents at an active fuel station had variable dwell times, making a mandatory full-episode requirement impractical and potentially introducing self-selection bias. The trailer was purposively edited to cover all four measured gratification dimensions, ensuring representativeness across cognitive, affective, tension release, and personal integration content. The trailer applied the principle of representative stimulus (Young et al., 2012). GS-GO instruments covered four dimensions (cognitive, affective, tension release, personal integration), each with three Likert-scale

items, validated ( $r = 0.431-0.791$ ) and reliable ( $\alpha = 0.865$ ). Success criteria: (1) positive overall gap; (2)  $\geq 75\%$  dimensions positive; (3) no dimension  $< -20\%$ ; (4) mean GO  $\geq 70\%$ .

This study intentionally employed the GS-GO gap analysis as the primary effectiveness measure rather than a pre-test/post-test behavioral design, given the naturalistic field setting and the short single-session exposure. The GS-GO framework measures gratification-based effectiveness whether the medium met and exceeded user expectations which is appropriate for evaluating media reception in non-formal, non-captive audience contexts (Bahfiarti & Arianto, 2022).

## RESULTS

The needs analysis involved 30 drivers whose demographic and behavioral characteristics are summarized in Table 1. The dominant profile was male (70.0%), aged 36–45 years (40.0%), employed as private-sector workers (50.0%), commuting 31–50 km per trip (40.0%), and driving 3–5 times per week (53.3%). These characteristics confirm that the target population consists of active, high-frequency drivers with substantial real-world road safety exposure.

**Table 1.** Respondent Characteristics in the Define Phase (n=30)

| Characteristic      | Category               | n  | %    |
|---------------------|------------------------|----|------|
| Gender              | Male                   | 21 | 70.0 |
|                     | Female                 | 9  | 30.0 |
| Age                 | 17–25 years            | 5  | 16.7 |
|                     | 26–35 years            | 9  | 30.0 |
|                     | 36–45 years            | 12 | 40.0 |
|                     | 46–55 years            | 4  | 13.3 |
| Education           | Junior High School     | 3  | 10.0 |
|                     | Senior High/Vocational | 15 | 50.0 |
|                     | Diploma (D1–D3)        | 5  | 16.7 |
|                     | Bachelor (S1)          | 6  | 20.0 |
| Occupation          | Postgraduate           | 1  | 3.3  |
|                     | Private Employee       | 15 | 50.0 |
|                     | Entrepreneur           | 7  | 23.3 |
|                     | Student                | 4  | 13.3 |
|                     | Civil Servant/Military | 2  | 6.7  |
| Driving Frequency   | Homemaker              | 2  | 6.7  |
|                     | 3–5 times/week         | 16 | 53.3 |
|                     | Every day              | 10 | 33.3 |
| Driving Distance    | 1–2 times/week         | 4  | 13.3 |
|                     | 31–50 km               | 12 | 40.0 |
|                     | 10–30 km               | 10 | 33.3 |
|                     | >50 km                 | 4  | 13.3 |
| Accident Experience | <10 km                 | 4  | 13.3 |
|                     | Near-accident          | 13 | 43.3 |
|                     | Experienced accident   | 10 | 33.3 |
|                     | Never                  | 7  | 23.3 |

The dominant driving problem was drowsiness (n=15, 50%), followed by lack of concentration (n=4) and insufficient traffic anticipation (n=4) directly informing the content priorities of both podcast episodes. Regarding podcast consumption behavior: 53.3% consumed podcasts more than three times per week; YouTube was the preferred platform (76.7%); audiovisual format was preferred over audio-only (83.3%); 56.7% preferred 15–20 minute episode duration; and 83.3% preferred a relaxed conversational style. Most importantly, 93.3% expressed strong or very strong interest in a road safety podcast, confirming the target population's receptiveness to this media format.

Expert validation results are presented in Table 2. The overall feasibility score of 85.47% exceeded the required  $\geq 75\%$  threshold. The content expert's score of 76.66% reflected recommendations to incorporate more explicit legal references and expert testimony, particularly to strengthen the personal integration dimension. The media expert's high score of 94.28% validated the production quality, visual design coherence, and structural clarity. Both scores indicate the podcast was ready for dissemination.

**Table 2.** Expert Validation Results

| Validator                            | Score (%) | Category        |
|--------------------------------------|-----------|-----------------|
| Content Expert (Road Safety)         | 76.66     | Highly Feasible |
| Media Expert (Digital Communication) | 94.28     | Highly Feasible |
| Overall Average                      | 85.47     | Highly Feasible |

**Figure 2.** Screenshot of SaveDrive ID Podcast on YouTube

The podcast was disseminated to 100 drivers at the same research site. GS-GO gap analysis results across four need dimensions are presented in Table 3, and product success criteria assessment in Table 4. All four success criteria were met. The overall positive gap of +8.23% confirms that Gratifications Obtained consistently exceeded Gratifications Sought. All four dimensions showed positive gaps (100%, exceeding the  $\geq 75\%$  threshold). No dimension fell below the  $-20\%$  lower bound. The mean GO score of 90.43% substantially exceeded the 70% minimum threshold. The cognitive dimension registered the largest gap (+10.87%), reflecting the highest discrepancy between modest pre-use expectations (GS = 79.20%) and strong post-use satisfaction (GO = 90.07%). Conversely, the personal integration dimension recorded the smallest gap (+6.00%), not due to low GO performance (GO = 90.53%, the highest absolute score), but because it also carried the highest initial GS expectations (84.53%) the highest pre-use score among all dimensions.

**Table 3.** GS-GO Gap Analysis Results per Dimension (n=100)

| Dimension            | GS (%) | GO (%) | Gap (%) | t(99) | p-value | Cohen's d | Category          |
|----------------------|--------|--------|---------|-------|---------|-----------|-------------------|
| Cognitive            | 79.20  | 90.07  | +10.87  | 8.178 | < 0.001 | 0.818     | Highly Satisfying |
| Affective            | 81.67  | 89.87  | +8.20   | 6.348 | < 0.001 | 0.635     | Highly Satisfying |
| Tension Release      | 82.40  | 90.27  | +7.87   | 6.269 | < 0.001 | 0.627     | Highly Satisfying |
| Personal Integration | 84.53  | 90.53  | +6.00   | 4.967 | < 0.001 | 0.497     | Highly Satisfying |
| Overall              | 82.20  | 90.43  | +8.23   | 8.857 | < 0.001 | 0.886     | Highly Satisfying |

**Table 4.** Product Success Criteria Assessment

| Nu. | Criterion                       | Requirement      | Result       | Status |
|-----|---------------------------------|------------------|--------------|--------|
| 1   | Positive overall gap            | Gap > 0%         | +8.23%       | Met    |
| 2   | $\geq 75\%$ dimensions positive | $\geq 3$ of 4    | 4/4 (100%)   | Met    |
| 3   | No dimension < $-20\%$          | All $\geq -20\%$ | 0 dimensions | Met    |
| 4   | Mean GO $\geq 70\%$             | GO $\geq 70\%$   | 90.43%       | Met    |

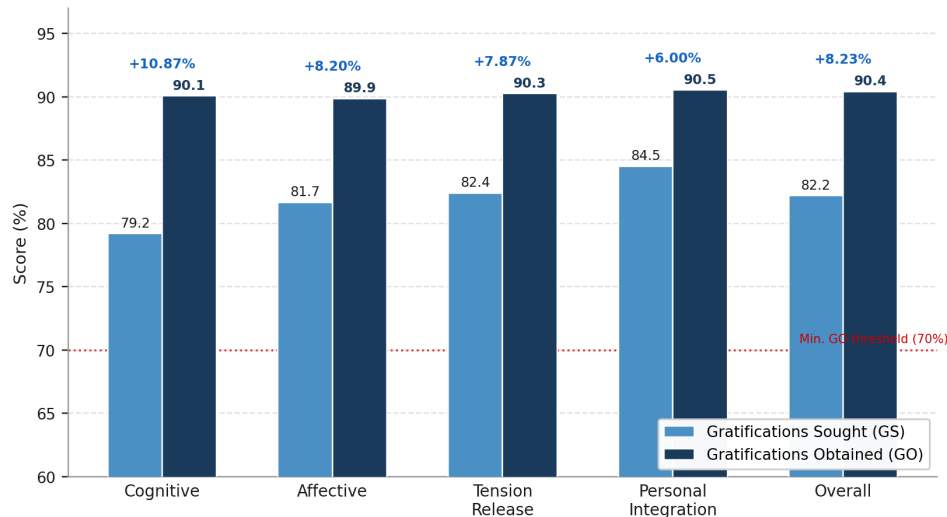


Figure 3. Comparison of GS and GO Scores Across Four Need Dimensions

## DISCUSSION

All four product success criteria were met, confirming the overall effectiveness of "SaveDrive ID" as a road safety education medium. The overall expert validation score of 85.47% exceeds the feasibility threshold of 75% and is consistent with outcomes reported for digitally developed educational media validated through structured expert review processes. Manegesa et al. (2025) reported similarly strong expert validation outcomes for a multiplatform simulation learning media developed through R&D, concluding that systematic incorporation of expert feedback during the Develop phase is a reliable mechanism for producing feasible educational products regardless of media format. The present study reinforces this conclusion in the context of podcast-based non-formal education for adult drivers.

The cognitive dimension registered the highest positive gap (+10.87%), indicating that "SaveDrive ID" substantially exceeded respondents' prior expectations in terms of knowledge delivery and practical applicability. This outcome reflects the high practical relevance of the content to the respondent population: 76.7% had experienced either a road accident or a near-accident, meaning the information about defensive driving techniques and drowsiness management was not abstract it directly addressed their lived driving challenges. This experiential alignment between content and audience is consistent with Wahyuni et al. (2023), who demonstrated that audiovisual podcast content produces more immediately applicable learning outcomes for adult learners when content is contextually grounded in their daily experiences. When those expectations were exceeded by a margin of over 10%, it signals not only content quality but also a successful bridging of the gap between informal media consumption and substantive learning (Sharon, 2023).

The affective dimension (gap +8.20%) confirmed the podcast's capacity to generate an emotionally satisfying listening experience. The key design decision driving this outcome was the deliberate adoption of a relaxed, conversational delivery style explicitly preferred by 83.3% of respondents in the Define phase needs analysis. This finding is consistent with Pratiwi et al. (2024), who identified the entertainment and enjoyment dimension of podcasts as one of the strongest predictors of gratification exceeding initial expectations, particularly among younger and middle-aged adult audiences. Viscarra-Muñoz et al. (2025) further established that educational podcasts which successfully blend informational and entertainment value commonly termed "edutainment" achieve systematically higher satisfaction scores than purely informational formats. The "SaveDrive ID" podcast's design explicitly operationalized this principle: rather than adopting a lecture-style or formal tone, the episodes were produced as conversational programs that normalized road safety awareness as part of everyday driver culture. The positive affective gap suggests this strategy was effective.

The tension release dimension (gap +7.87%) captured a unique functional benefit of the podcast format that is particularly salient for the professional driver population studied. Of the 100 dissemination respondents, 13.3% regularly traveled distances exceeding 50 km, and 53.3% drove three to five times per week a profile associated with chronic driving fatigue and psychological stress. The podcast's dual function providing informational content while simultaneously offering a form of relaxation and mental disengagement from driving pressures directly addresses this population's tension relief needs. Zou et al. (2025) noted in their scoping review that health-related podcasts achieving both informational and experiential value consistently outperform single-function media in audience satisfaction ratings. The present finding extends this observation to the road safety education context, suggesting that podcast content designed to relax as well as inform may be particularly well-suited to high-stress, high-frequency driver populations. This characteristic also differentiates podcast from conventional road safety

training formats such as classroom seminars, which typically require sustained cognitive engagement without providing experiential relief.

The personal integration dimension recorded the smallest gap (+6.00%) among all four dimensions. This result requires careful interpretation: it does not indicate underperformance of the podcast, but rather reflects the structural consequence of the highest initial GS expectations across all dimensions. When pre-use expectations are this elevated, the mathematical ceiling for a positive gap narrows a phenomenon directly corroborated by [Nugroho & Panjaitan \(2021\)](#), who identified high initial motivation as a structural driver of compressed gap magnitudes in U&G evaluations. Notably, the GO score for this dimension was the highest absolute satisfaction score across all four dimensions, demonstrating that respondents were deeply satisfied with the podcast's contribution to their driving confidence and safety-conscious identity. The content expert's recommendation to incorporate real accident case narratives and expert testimony in future episodes specifically targets this dimension.

From a broader theoretical perspective, the consistent positive  $GO > GS$  pattern across all four dimensions confirms that "SaveDrive ID" functioned not merely as an information delivery channel but as a comprehensive gratification-generating media experience. U&G theory posits that audiences sustain voluntary media use when the gratifications they obtain consistently meet or exceed what they sought ([Bahfiarti & Arianto, 2022](#)). This pattern has been empirically confirmed in adult populations across diverse digital media contexts, where purposive value and entertainment value are the strongest predictors of sustained voluntary use ([Bhat et al., 2024](#)). The mean GO score of 90.43% 20 percentage points above the minimum threshold and the +8.23% overall gap together suggest that the podcast created a sufficiently strong gratification experience to support repeated voluntary consumption. This self-sustaining consumption dynamic is a critical advantage over conventional road safety training programs, which require institutional scheduling, physical mobilization of participants, and ongoing facilitator resources to maintain engagement ([Oktavianti et al., 2023](#)).

The present findings also contribute to a broader evidence base on digital media in safety education. [Setyowati et al. \(2025\)](#) demonstrated the effectiveness of interactive social media video content for road safety education among university students in Indonesia, reporting significant improvements in safety knowledge and attitudes. The present study extends this evidence base to active adult driver populations demographic with higher real-world accident exposure using a different digital format (podcast) and a different evaluative framework (U&G gap analysis). Complementary evidence from Spain further demonstrates that digitally disseminated road safety communication campaigns can achieve measurable behavioral impact when content is designed to be emotionally resonant and contextually relevant ([Faus et al., 2024](#)). The complementarity of these findings suggests that the road safety education field would benefit from a multi-format digital media strategy: interactive social media video content for younger, student populations, and podcast-based content for working adult driver populations whose consumption behavior is better aligned with on-demand, asynchronous audio-visual formats. Format selection based on empirically identified audience consumption preferences as systematically conducted in the Define phase of this study is therefore a methodological contribution as much as a practical one.

## CONCLUSION

This study successfully developed the "SaveDrive ID" podcast as a road safety education medium through the 4D R&D model and evaluated its effectiveness using the Uses and Gratifications framework. Expert validation confirmed high feasibility (overall: 85.47%). Effectiveness analysis demonstrated positive GS-GO gaps across all four need dimensions cognitive (+10.87%), affective (+8.20%), tension release (+7.87%), and personal integration (+6.00%) with an overall gap of +8.23% and a mean GO score of 90.43%, all categorized as Highly Satisfying. All product success criteria were met.

These findings establish podcast as a viable, flexible, and impactful medium for non-formal road safety education among active adult drivers, capable of reaching the target population without the structural constraints of conventional in-person delivery. The study's R&D process confirms that structured development with systematic expert validation reliably produces feasible educational media products, consistent with [Manegesa et al. \(2025\)](#). Practitioners and policymakers may consider integrating podcast-based road safety content into formal driver licensing education and non-formal outreach programs at high-traffic locations.

This study has two notable limitations. First, the absence of a pre-test/post-test design means that actual behavioral change resulting from podcast consumption was not measured only gratification-based effectiveness. Future research should incorporate longitudinal or observational designs. Second, the single-location, purposive sampling approach limits generalizability. Replication in rural or inter-city highway contexts is recommended. Future episodes should also incorporate real accident case narratives and expert testimony to strengthen the personal integration dimension, as recommended by the media validator.

This study makes two distinct scientific contributions. Theoretically, it extends the application of Uses and Gratifications theory beyond conventional academic media contexts to non-formal adult safety education, demonstrating that the GS-GO gap framework is a valid and sensitive instrument for measuring educational media effectiveness in naturalistic, non-captive audience settings. Methodologically, it establishes a replicable R&D protocol combining the 4D development model with U&G effectiveness evaluation that can be applied to other

non-formal public education contexts where conventional pre-test/post-test designs are impractical. Together, these contributions advance both communication science and educational media development literature by providing an empirically grounded model for digital public education design and evaluation.

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## **AUTHOR CONTRIBUTION STATEMENT**

AUNY conceptualized the study, designed the podcast, conducted data collection, analyzed data, and wrote the manuscript. BPR supervised the research design, provided conceptual guidance, and reviewed the final manuscript. HP contributed to data interpretation and critical revision of the manuscript. All authors approved the final version for submission.

## **AI DISCLOSURE STATEMENT**

The authors declare that this research was prepared, researched, written, and edited without the aid of artificial intelligence (AI) techniques.

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